Superfund Records Center SITE: SUTTON BROOK BREAK: 11,09 OTHER: 18770

C

U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

		SECT	TION I	•	
MANUFACTURER'S NAME	<u> </u>		EMERGENCY TELEPHOI		
W.A.WOOD COMPANY			617-389- 2410)	
ADDRESS (Number, Street, City, State, and ZIP C 108 SPRING STREET		ERETT.	MASS 02149		
CHEMICAL NAME AND SYNONYMS			TRADE NAME AND SYNONYMS		
CHEMICAL FAMILY Petroleum Hydrocarbons		<u></u>	C EBLIS CUTTING OF		
rectoledm nydlocalbons			Mineral Oil, Sulfur Contain	iinq	Carl
SECTION	V-10-	-HAZAI	RDOUBINGREDIENTS - TO THE PROPERTY -	* 4	· • * • • •
PAINTS, PRESERVATIVES, & SOLVENTS	*	TLV (Units)	ALLOYS AND METALLIC COATINGS	*	TLV (United
PIGMENTS			BASE METAL		N.A.
CATALYST	1	N.A.	ALLOYS	 	
VEHICLE	1		METALLIC COATINGS		I.A.
SOLVENTS	+	N.A.	FILLER METAL	+-'	1
ADDITIVES	+	N.A.	PLUS COATING OR CORE FLUX OTHERS	+	N.A.
OTHERS	+	13.7.		+	
				+	TLV
HAZARDOUS MIXTURE	S OF	OTHER LI	QUIDS, SOLIDS, OR GASES	*	(Units
NON E				<u> </u>	<u> </u>
				•	
					!
05			NIVOIGAL DATA		
			PHYSICAL DATA	7_	
	- 16	00 F	SPECIFIC GRAVITY (H2O=1)	0.	
SOILING POINT (°F.) Greater, That					
VAPOR PRESSURE (mm)	Unk		PERCENT; VOLATILE EV VOLUME (%)	-	1 12
VAPOR PRESSURE (mm	Unk	"	EV VOLUME (%) EVAPORATION RATE (S(2)
VAPOR PRESSURE (mm (A)			EVAPORATION RATE		NA
VAPOR PRESSURE (mm)	In	" solubl	EVAPORATION RATE (=1)		
VAPOR PRESSURE (mm A PROPERTY (AIR-1) VAPOR DENSITY (AIR-1) SOLUBILITY IN WATER APPEARANCE AND ODOR DATE CO	In	solubl	evaporation rate (=1) with sulfurized odor		
VAPOR PRESSURE (mm No. 1997) VAPOR DENSITY (AIR-1) SOLUBILITY IN WATER APPEARANCE AND ODOR Dark Co. SECTION IV -	In	solubl	evaporation RATE (
VAPOR PRESSURE (mm No. 1997) VAPOR DENSITY (AIR-1) SOLUBILITY IN WATER APPEARANCE AND ODOR Dark Co. SECTION IV -	In	solubld oil	evaporation rate (=1) with sulfurized odor		Uel
VAPOR PRESSURE (mm No. (Martin VAPOR DENSITY (AIR-1) SOLUBILITY IN WATER APPEARANCE AND ODOR Dark Co. SECTION IV - FLASH POINT (Method used) 400°F C.	In FIR	solubl d oil E AND I	evaporation RATE (
VAPOR PRESSURE (mm Particular VAPOR DENSITY (AIR=1) SOLUBILITY IN WATER APPEARANCE AND ODOR Dark Col SECTION IV - FLASH POINT (Method used) 400°F C. EXTINGUISHING MEDIA Dry Chemic SPECIAL FIRE FIGHTING PROCEDURES	In fore	solubl d oil E AND I	evaporation RATE (
VAPOR PRESSURE (mm No. (1997) VAPOR DENSITY (AIR=1) SOLUBILITY IN WATER APPEARANCE AND ODOR Dark Co. SECTION IV - FLASH POINT (Method used) 400°F C.	In fore	solubl d oil E AND I	evaporation RATE (
VAPOR PRESSURE (mm Paris (FIR O.C.	solubl d oil E AND I	evaporation RATE (

(Continued on reverse side)

Form OSHA-20

		SECTION	V - HEALTH	HAZARD DATA	
HRESHOLD LIMIT	VALUE U	MICHGWE			
FFECTS OF OVER		IE KONOWA	Ŋ		
EMERGENCY AND I			n soan and	water. Eye contact flu	sh wish
	tated cons		. -	Se contactes in	III WILLI
· · · · · · · · · · · · · · · · · · ·			, 	•	.•
		SECTIO	M VI - REÁC	TIVITY DATA	
STABILITY	UNSTABLE		CONDITIONS TO	AVOID	
	STABLE	X	to the second	Charles of the state of the sta	
INCOMPATABILITY	(Materials to avoid	1)	Oxidizing	Agents	
HAZARDOUS DECO	MPOSITION PRO	DUCTS	_		
	MAY OC	arbon " II Cur	pubxrqe 68	Sulfur Dioxide during co	moustic!
HAZARDOUS POLYMERIZATION					
	MILL NO.	TOCCUR	X		
STEPS TO BE TAKE		ERIAL IS REI	LEASED OR SPILL	LEAK PROCEDURES	
WASTE DISPOSAL I	Same a	s for n	nineral of	11	
	معتب المعتب المراجع المراجع المراجع	The same of the sa	SPECIAL PRO	ECTION INFORMATION	
STEDUCE TO DAY BEIC	//EL/IUN /XN////	r tVDei	NON E	T SPECIAL	
RESPIRATORY PRO	, , , ,,				
RESPIRATORY PRO	LOCAL EXHAU	IST		1	
RESPIRATORY PRO	MECHANICAL	IST		OTHER	
RESPIRATORY PRO	MECHANICAL	IST	l Ev	1	les.
PROTECTIVE GLO	MECHANICAL VES	IST	l Ev	OTHER E PROTECTION	les.
RESPIRATORY PRO	MECHANICAL VES	IST	l Ev	OTHER E PROTECTION	les.
PROTECTIVE GLO	MECHANICAL VES	(General)	I EY	OTHER E PROTECTION	les.
PROTECTIVE GLOV	MECHANICAL VES	(General) SECTION	IX - SPECIA	OTHER E PROTECTION E desireduse safety gogg	les.
PROTECTIVE GLOV	MECHANICAL VES	(General) SECTION	IX - SPECIA	OTHER E PROTECTION E desireduse safety gogg	les.
PROTECTIVE GLOV OTHER PROTECTIVE PRECAUTIONS TO	MECHANICAL WES VE EQUIPMENT BE TAKEN IN HA	(General) SECTION	IX - SPECIA	OTHER E PROTECTION E desireduse safety gogg	les.
PROTECTIVE GLO	MECHANICAL VES VE EQUIPMENT DE TAKEN IN HA	(General) SECTION	IX - SPECIA	OTHER E PROTECTION E desireduse safety gogg	iles.

Form OSHA-20 Rev. May 72

TRW-00346



95 Cherry St., Farmingdale, Long Island, N.Y. 11735

APPROVED

JUN 0 8 1987 ENVIRONMENTAL ENGINEERING

JANUARY 1987

REF: C-12 ACTIVATOR

THIS LETTER IS TO ASSURE YOU THAT THE MATERIAL SAFETY DATA SHEET (MSDS) WE ARE FURNISHING YOU FOR THE REFERENCED PRODUCTS LISTS ALL CHEMICALS IN THIS PRODUCT GREATER THAN ONE PERCENT BY VOLUME OR WEIGHT AND LISTED IN OSHA 1910. 1000 THROUGH 1046.

THE MSDS FURNISHED TO YOU SHOWS THE CHEMICAL NAMES AND THRESHOLD LIMIT VALUES AS THEY ARE LISTED IN THE CURRENT OSHA REGULATION.

PUMA CHEMICAL CORP.

ANDREW PUMA PRES.

NAME OF CHEMICAL COMPOUNDS:

E.D.T.A.
SODIUM LAURETH SULFATE
SOBIRTAL
DEOXIDIZING AGENT
NON FATTY WETTING AGENTS

(WATER SOFTNER) (WETTING AGENT) (EMULSIFYING AGENT) (DEOXIDIZER) (SOAPS) (PH 7.6)

(trade Names)

Area Code: 516 MYrtle 4-4114 Telex# TWX# 5102220866 A.B. PUMA CHEM. FRDLE

TRW-00347

Area Code: 516 MYrtle 4-4114 Telex# TWX# 5102220866 A.B. PUMA CHEM. FROLE N.Y.



Puma Chemical Corp.

95 Cherry St., Farmingdale, Long Island, N.Y. 11735

MATERIAL SAFETY DATA SHEET (OSHA FORM) C-12 ACTIVATOR

CERTIFIED BY PUMA CHEMICAL CORP. CERTIFICATION ON OSHA FORM ON C-12 ACTIVATOR.

HAZARDOUS INGREDIENTS:

VAPOR DENSITY NONE VAPOR PRESSURE NONE FLASH POINT NONE FLAMMABLE NONE TOXICITY NONE

HEALTH HAZARD INFORMATION ON C-12 ACTIVATOR

FIRST AID PROCEDURES

WASH SKIN OR EYES WITH TAP WATER

IRRITATION

NONE

SKIN CONTACT

NONE, JUST WASH

WITH TAP WATER

SKIN ABSORPTION

NONE

EFFECTS ON OVER EXPOSURE NONE

CONTAINS: WETTING AGENT (SOAPS) NON FATTY, AND DE OXIDIZING AGENT.

WASTE DISPOSAL METHODS

DILUTE WITH WATER, AND THROW AWAY IN THE DRAIN.

SPECIAL PROTECTION NONE

SPILL OR LEAK PROCEDURES: RINSE OFF WITH TAP

WATER AND FLUSH IN

DRAIN.

NON CORROSIVE PH 7.6

PREPARED BY

PUMA CHEMICAL CORP. 95 CHERRY ST., BOX # 339 FARMINGDALE, N.Y. 11735



23000 ST. CLAIR AVE. • CLEVELAND, OHIO 44117 • 800-328-9745 EMERGENCY 24 HOUR CHEMTREC NO. 800-424-9300

MATERIAL SAFETY DATA SHEET

08501

	Section I			
Identity CP-202 GRAY PRIMER	NFPA CODE:	96/91/88	Date Revised	
~~~	HEALTH: 2	FLAMMABILITY: 3	REACTIVIT	Y: 1
Section II -	Hazardous	Ingredient	ts	
Hazardous Ingredients	CAS #	Health Haz	ards ACGI	H TLV-T
BUTYL CELLOSOLVE (2-BUTOXYETHANOL)		COMBUSTIBL STEL - 7	5 PPM	PPM SKI
ETHANOL (ETHYL ALCOHOL) (SOPROPYL ALCOHOL	64-17-5 67-63-0			∂0 MG/CU ∂ PPM
(ISOPROPANOL)	NIOSH - 400	PPM STEL -	500 PPM	
PHENOL SILICON DIOXIDE	108-95-2	SKIN DUST		MG/CUM MG/CUM
TITANIUM DIOXIDE		-7 TOTAL DUST	_	MG/CUM
SECONDARY BUTYL ALCOHOL	78-92-2	FLAMMABLE	196	PFM
NO COMPONENT WAS FOUND TO BE CA	ACTNOGENIC I	N NTP TARC OR	AH20	
	<del></del>	·		
Section III - Phys:			eristics	·
Boiling Point 180 - 250 DEG F	Specif	fic Gravity(H2 <b>0</b> =1)	1.01	
/apor Pressure(am Hg) NOT DETERMINED		nt Volatile Nume (%)	78	
/apor Density (AIR=Reference) HEAVIER		ration Rate r=Reference)	SLOWER	
later Soluble NO				
Oppearance and Odor GRAY LIQUID, MILD ODOR				
Section IV - Fire	and Explo	sion Hazar	d Data	
Flash Point (Method Used) 53 DEG F TCC		ole Limits ST VALUE	LEL 1.0	UEL
Extinguishing Media CAREON	DIOXIDE. DRY	CHEMICAL.		
Special Fire Fighting Procedures BUILD UP IN CONTAINER.	IF EXPOSED	TO HEAT, PRES	SURE WILL	
		ATER STREAM W	OULO SPREA	מ
FIRES. STATIC ELECTRICITY COULD	CAUSE IGNITI	ON.		
			י מיד	W-00349



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#### MATERIAL SAFETY DATA SHEET

CP-202 GRAY PRIMER

08501

#### Section V - Reactivity Data

STABIL ITY

Unstable

Conditions to Avoid

Stable

AVOID PROLONGED STORAGE AT ELEVATED TEMPERATURES.

#### INCOMPATIBILITY (Materials to Avoid)

STRONG OXIDIZERS

#### Hazardous Decomposition Products

OXIDES OF CARBON AND NITROGEN

**HAZARDOUS** 

May Occur

Conditions to Avoid

POLYMERIZATION Will Not Occur *

NONE

#### Section VI - Health Hazard Data

Effects of Overexposure MAY CAUSE SKIN IRRITATION OR DRYING AND MAY IRRITATE THE EYES AND CAUSE BLURRED VISION. CRACKING. INHALATION MAY IRRITATE THE RESPIRATORY TRACT AND CAUSE HEADACHES, NAUSEA, VOMITING AND DIZZINESS. INGESTION MAY CAUSE NAUSEA AND VOMITING. MAY CAUSE HEMOLYSIS AND HEMOGLOBINURIA. TARGET ORGANS THAT MAY BE AFFECTED ARE BLOOD, KIDNEYS SKIN, BLOOD, EYES AND RESPIRATORY SYSTEM.

#### Emergency and First Aid Procedures

Eye (Contact): FLUSH EYES WITH COPIOUS AMOUNTS OF WATER FOR 15 MINUTES AND CONTACT PHYSICIAN IMMEDIATELY.

Skin (Contact):

WASH WITH SOAP AND WATER. CONTACT PHYSICIAN

IRRITATION PERSISTS.

Ingestion (Swallowing):

DO NOT INDUCE VOMITING. DRINK LARGE QUANTITIES

OF WATER AND/OR MILK. CONSULT PHYSICIAN IMMEDIATELY.

Inhalation (Breathing):

REMOVE TO FRESH AIR. AID IN BREATHING IF

NECESSARY AND GET IMMEDIATE MEDICAL ATTENTION IF NEEDED.

#### Section VII - Precautions for Safe Handling & Use

Steps to be taken in Case Material is Released or Spilled

WEAR APPROPRIATE PROTECTIVE EQUIPMENT. REMOVE IGNITION SOURCES. CONTAIN. ABSORB WITH INERT MATERIAL AND DISPOSE. SPILL

Waste Disposal Method:

DISPOSE IN ACCORDANCE WITH LOCAL, STATE AND

FEDERAL REGULATIONS.

Handling and Storage

DO NOT STORE OR USE NEAR HEAT, SPARKS, OR FLAME. DO NOT STORE NEAR COMBUSTIBLE MATERIAL. DO NOT STORE IN DIRECT SUNLIGHT. WHEN SANDING DRY FILM, USE NIOSH APPROVED DUST

MASK, KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE.

Other Precautions SHOWERS AND EYE WASH FOUNTAINS SHOULD BE MADE AVAILABLE WHERE CHEMICALS ARE USED.

■ METAL PROCESSING SYSTEMS ■■■ 7100000-00 MAN-GILL CHEMICAL CO



23000 ST. CLAIR AVE. • CLEVELAND, OHIO 44117 • 800-328-9745 EMERGENCY 24 HOUR CHEMTREC NO. 800-424-9300

#### MATERIAL SAFETY DATA SHEET

CP-202 GRAY PRIMER

08501

#### Section VIII - Control Measures

Respiratory Protection (Specify Type)

USE NIOSH APPROVED EQUIPMENT WHEN AIRBORNE EXPOSURE LIMITS ARE EXCEEDED.

**VENTILATION** 

Local

RECOMMENDED TO MAINTAIN BELOW TLV

Mechanical

Protective Gloves

NEOPRENE RUBBER

Eye Protection

SPLASH GOGGLES OR FACE SHIELD

Other Protective Clothing or Equipment

PROTECTIVE CLOTHING SUFFICIENT TO PREVENT SKIN CONTACT.

Work/Hygienic Practices

WASH THOROUGHLY BEFORE EATING, SMOKING OR USING TOILET FACILITIES.

TRW-00351

0908-1717

THE INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE DEPENDABLE AND IS ACCURATE TO THE BEST OF THE SELLER'S KNOWLEDGE, HOWEVER, THE SELLER MAKES NO WARRANTY WHATSDEVER, EXPRESSED, IMPLIED, OR OF MERCHANTABILITY REGARDING THE ACCURACY OF SUCH DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF, THE SELLER ASSUMES NO RESPONSIBILITY FOR INJURY TO THE BUYER OR TO THE THIRD PARTY PERSONS OR FOR ANY DAMAGE TO ANY PROPERTY AND BUYER assumes all such risk.

MAN-GILL CHEMICAL CO.

FROM: Non Main  FROM: Non Main  FROM: Non Main  FROM: Non Main  DATE 6-5-87  SUBJECT Die Cleaner Anti-rust (500)  Signature Subject (500)  DATE 6/8	
Senies - There is a good shared  that we will oft to use The Stewart  Hall rust inhibitor outlined in the  attached data sheet. Please advise  your offerwal - or otherwise - on this.  SIGNATURE SHUTH  DATE 6/8	
Senies - There is a good shared  that we will oft to use The Stewart  Hall rust inhibitor outlined in the  attached data sheet. Please advise  your offerwal - or otherwise - on this.  SIGNATURE SHUTH  DATE 6/8	
Senies - There is a good shared  that we will oft to use The Stewart  Hall rust inhibitor outlined in the  attached data sheet. Please advise  your offerwal - or otherwise - on this.  SIGNATURE SHUTH  DATE 6/8	
that we will opt to use The Stewart  Hall rust inhibitor sutlined in the  attached data sheet. Please edice  your offerval - or otherwise - on this.  SIGNATURE Shows	
Hall rust inhibitor sutlined in the attached data sheet. Please advise your approval or otherwise - on this.  SIGNATURE SHUTH  RETURN TO: Don Macon  DATE 6/3	
Hall rust inhibitor sutlined in the attached data sheet. Please advise your approval or otherwise - on this.  SIGNATURE SHUTH  RETURN TO: Don Macon  DATE 6/3	
your approval or otherwise - on this.  SIGNATURE SUNTY  DATE 6/8	
your approval or otherwise - on this.  SIGNATURE SUNTY  DATE 6/8	
your offerval or otherwise - on this.  SIGNATURE SWAM  DATE 6/8	
your offerval or otherwise - on this.  SIGNATURE SWAM  DATE 6/8	
your approval or otherwise - on this.  SIGNATURE SUNDAY  RETURN TO: Dan Macan  DATE 6/8	
SIGNATURE SWAY  RETURN TO: DON MOCON  DATE 6/8	
RETURN TO: Dan Mccn  DATE 6/8	'
REPLY: Den	
I don't see any problem using the substance as long	
as personal protective obthing is worn. The concentrated	<del></del> -
rust inhibitor is very corroside.	
Spent solution needs to be handled it is a hazardous waste	
Please advise me of the day you start to use.	
Thunks	
SIGNATURE Minnus	

REPLIER'S COPY-RETAIN FOR YOUR FILES

# MATERIAL SAFETY DATA SHEET

222 WASHINGTON STREET

STEWART HALL
CHEMICAL CORPORATION

MT. VERNON, N.Y. 10663

0505	ION I		
SECT Manufacturers Name		gency Telepho	ne
Stewart-Hall Chemical Corporation	(914	(s) 668-6300	
Address 222 Washington St., Mount Vernon, N	Y 10553		
Chemical Name and Synonyms Corrosion Inhibi	tor Trade Name	and Synonyms C	CPF-100
Chemical FamilyAlkaline Corrosion Inhibitor	Formula See Belov	w i	
SECTION II -	INGREDIENTS		
	C.A.S. NO.	₩/ _V %	<del></del>
Triethanolamine 85%	102-71-6+111-42-2		> 1.0
Sodium Tolyltriazole	64665-57-2		> 1.0
Sodium Meta Silicate	6834-92-0		>1.0
Contains no other			
"hazardous substances"			
CECTION III	PHYSICAL DATA		
Boiling Point (OF.) 212°F	Specific Gravity	(H U~I)	1,0,7
	Percent Volatile By volume (1%)	1	1.047
Vapor Pressure (mm Hg.)	Evaporation Rate	······	80%
Vapor Density (Air=1)	( water =1)		<u> </u>
Solubility in Water 100%	pH of 1% solution	<del></del>	11.0
Appearance and Odor light yellow - odor s	ugnt		
SECTION IV - FIRE AND	XPLOSION HAZARD		
Flash Point (Method Used) N/A	Flammable Limits	E Lei	Uel
Extinguishing Media N/A			<del> </del>
Special Fire Fighting Procedures			<del></del>
N/A			
Unusual Fire and Explosion Hazards			
N/A		TR	W-00353

	SECTI	ON V - HEALTH HAZARD	DATA
Threshold Lim	it Value Not t	ested	
Effects of Ov	erexposure Eyes-	alkaline liquid - corrosive	- skin irritant
Emergency and	First Aid Proced	lures Eyes - flush with wa	ter for 15 minutes seek
medic <u>al</u> attent	ion. Skin - wash v	well with soap and water.	
		ON VI - REACTIVITY DATA	Α
Stability	Unstable	Conditions to Avoid	
	Stable X		
	ty (Materials to	· · · · · · · · · · · · · · · · · · ·	
<u> </u>	omposition Produc		
Hazardous Polymerizati	on Will N	cor Conditions to the Uccur X	co Avoid
	SECTION	I VII - SPILL OR LEAK PRO	CEDURES
Steps to be	taken in case ma	terial is released or sp	illed
Use chemical a	bsorbent or flush v	vithwater to drain.	
Waste Disposa	1 11 11 1		system flush well with water.
large spills			system riden wen with water.
Large spiris -	pump back into co	maner.	
	SECTION VIII	- SPECIAL PROTECTION IN	IFORMATION
Respiratory P	rotection (Specif	y Type) None	
Ventilation	Local Exhaust	,	Special
	Mechanical (Gene	ral)	Other
Protective Glo	oves Rubber	Eye Protecti	ion goggles
Other Protect	ive Equipment	apron	
	SECTI	ON IX - SPECIAL PRECAUT	TIONS
Precautions To	Be Taken In Han	dling and Storing	
		from acids.	
Other Precaut	ions		TRW-00354

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Page (2)

Prepared , H.G. 5/20/8

0908-1720

# U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

Form Approved OMB No. 44-R1387

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I						
MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.					
CRC Chemicals USA	215-674-4300					
ADDRESS (Number, Street, City, State, and ZIP Code) 885 Louis Drive, Warminster, PA 189	74					
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS  CRC 5-56 (Aerosol)					
Rust Preventive	ORMULA					

SECTION	N II -	HAZAF	RDOUS INGREDIENTS		
PAINTS, PRESERVATIVES, & SOLVENTS	*	TLV (Units)	ALLOYS AND METALLIC COATINGS	*	TLV (Units)
PIGMENTS BASE METAL					
CATALYST			ALLOYS		
VEHICLE METALLIC COATINGS					
SOLVENTS FILLER METAL PLUS COATING OR CORE FLUX					
ADDITIVES OTHERS					
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					TLV (Units)
Volatiles - High flash aliphatic hydrocarbon solvent					200
Propane-Isobutane (Propellent)					1000
Non-Volatiles - Organic c	orre	osion		19	•
			paraffinic oil		

	SEC	TION III - F	PHYSICAL DATA				
BOILING POINT (°F.)		380°F	SPECIFIC GRAVITY (H2O=1)		.8167		
VAPOR PRESSURE (mm Hg.) Solvent @ 68°F 0.28 VOLUME (%) 82							
VAPOR DENSITY (AIR=1)	Solvent	5.52	EVAPORATION RATE (TOTUENE =1)	Solvent	0.01		
SOLUBILITY IN WATER negligible							
APPEARANCE AND ODOR	Amber liqui	d, pleas	ant odor				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA						
FLASH-POINT (Method used) 175 F COC (Aerosol Concentrate)	Propellent portion 1.	88 9.58				
EXTINGUISHING MEDIA  CO, Foam, Dry chemic						
SPECIAL FIRE FIGHTING PROCEDURES The flash point of the propellent us	sed is -40°F COC and is	considered				
extremely flammable.						
Aerosol cans may explode at temperat	cures above 120°F.	TRW-00355				

SECTION V - HEALTH HAZARD DATA						ł	
THRESHOLD LIMIT		200 p	p <b>m</b>				
EFFECTS OF OVERI Eye irritat	EXPOS	, drying	of s	kin, exc	essive inha	alation causes dizziness	
and nausea.							
EMERGENCY AND I				+ amount	e of water	Skin contact-wash with	
mild soap a	and a	water, a	pply a	a skin c	ream; Inhal	lation-remove to fresh air	•
and apply a	irti:	ficial r	espir	ation if	necessary.	Ingestion-do not induce	_
l vomiting, c	all	a physic	cian.	In any	case, if sy	mptoms persist get medica	11
			SECTIO	ON VI - RE	EACTIVITY DA	TA	
STABILITY UNSTABLE CONDITIONS TO AVOID						•	
	STAI		х	Heat,	sparks & c	open flame.	
Strong oxid	liziı	ng agents	S .				!
HAZARDOUS DECO	wposi vie	TION PRODUC	rs al hvo	drocarbo	n combustic	on products plus acid hali	des.
HAZARDOUS		MAY OCCUR			CONDITIONS TO	AVOID	
POLYMERIZATION		WILL NOT O	CCUR	х			
	-				<u> </u>		<b>9.</b>
							' !
					OR LEAK PROC		
STEPS TO BE TAKE Normally no	t a	oplicable	to a	LEASED OR S REPOSOL	PILLED packages. I	f spill is large enough,	
flush with	wate	er, keep	flame	es, heat	and sparks	from area. Use respirato	. )
			.Smal	ll spill	s may be pi	cked up with absorbant ma	teria
WASTE DISPOSAL N	NETHO	ate or pu	ınctui	re aeros	ol cans. Bu	ry or discard in conforma	nce
						or partially filled	
containers	must	t be cons	sidere	ed "Haza	rdous Waste	e" and discarded as such.	
Γ		05051011		2250141 81	DOTECTION IN	I COMATION	ļ
			• • • • • •		ROTECTION IN		1
Use self co	nta:	ined brea	thing	g appara	tus for con	centrations above TLV.	İ
VENTILATION	To	maintair	n vapo		below TLV	SPECIAL	
	MEC	HANICAL (Gen	ieral)			OTHER	
PROTECTIVE GLOV	'ES				EYE PROTECTION	1	İ

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING OF . Protect cans from puncturing.

OTHER PRECAUTIONS Do not spray into open flame. Use with adequate ventilation.

TRW-00356

Not normally needed for aerosol OTHER PROTECTIVE EQUIPMENT

MSDS IDENTIFICATION NUMBER	DATE ISSUED	ISSI	JED BY	EMERGENCY PHONE NUMBER
CS-010	March 1, 1989	Engi	onmental neering artment	#Ibrich 203-239-4481 Chemtrec 800-424-9300
TRADE NAME: Carbon Steels			FORMU	ILA: Alloy composed of varying concentrations of elements listed in Section II.
I. PRODUCT IDENTIFICATI CHEMICAL NAME: See Section II			CHEMIC	CAL FAMILY: Alloy

#### II. HAZARDOUS CONSTITUENTS

STANDARD CARBON STEELS GROUP X

AISI-SAE 1050; 1065; 1070; 1074; 1075; 1095.

# DANGER INHALATION OF DUST OR FUME MAY CAUSE SERIOUS LUNG INJURY. SKIN, EYE AND MUCOUS IRRITATION MAY OCCUR.

- The standard carbon steels alloy products identified above may contain, in varying concentrations, the following elemental constituents: carbon, iron and manganese. For specific concentrations of these and other elements present, refer to the Material Safety Data Sheet (MSDS) for this product.
- Inhalation of metal dust or fume generated by the use of these alloys may cause adverse health effects such as reduced lung function, nasal and mucous membrane irritation. Exposure to dust or fume generated by the use of these alloys may also cause eye irritation, skin rash and effects on other organ systems.
- Chrome, nickel and some of their compounds are listed in the 3rd Annual Report on Carcinogens as prepared by the National Toxicology Program (NTP) as well as the International Agency for Research on Cancer (IARC) Monograph Series. The following information is a summary of findings reported to date:

Element or Certain Compounds Evaluated or Both (Identified by Element Shown)

Determination/Evaluation CHROME Evidence of

IROME NICKEL

carcinogenicity

Sufficient

Limited

to humans: Evidence of

carcinogenicity to animals:

Sufficient Sufficient

 Avoid breathing of dust or fume. If the use of this material produces dust or fume, use appropriate ventilation controls, personal protective equipment or both. For additional information refer to the Material Safety Data Sheet (MSDS) for this product.

#### **NOTICE: SECTION 313**

Some of the previously listed chemicals are subject to annual reporting of releases into the environment under Section 313 of the Emergency Planning and Community Right-To-Know-Act of 1986. It is the responsibility of the user to verify whether or not his or her facility is in compliance with all Federal and State Environmental regulations.

#### NOTICE: CALIFORNIA LIST

Our Material Safety Data Sheets (MSDS) have been reviewed for inclusion of any chemicals listed under the Safe Drinking Water and Toxic Enforcement Act of 1986 (California Proposition 65). We at this time do not report any of the "listed" chemicals as constituent components in any alloys currently processed by our company.

ALLOY AISI-SAE	UNS No.	CONSTITUENT(S)	% Maximum s Mn	nless otherwise shown. Fe	Other	DENSITY Ibs/cu in	(approx.) MELTING PT. degree (F)	
1050	G10500	.48/.55	.60/.90	BAL		.283	2700	
1065	G10650	.6070	.60/.90	BAL		.283	2700	
1070	G10700	.65:.75	.60/.90	BAL		.283	2700	
1074	G10740	.70:.80	.50∴80	BAL		.283	2700	
1075	G10750	70:.80	.40/.70	BAL		283	2700	
1095	G10950	.90:1:03	.30 .50	BAL		283	2700	
AS Number		7440-44-0	7439-96-5	7439-89-6				
Contaminant & xposure Limits		Not Listed	As Dust As Fume	As FeO Fume As Fe				
(mg·m3) EL TLV			5(c) 5(c) 5(c) 1	10 5				

TRW-00357

III. PHYSIC	CAL PROPERTIES				
FREEZING	POINT: Not Applicable		VAPOR PRESSURE (mmHg): Not Applicable		
MELTING PO	OINT: See Section II		VAPOR DENSITY (AIR = 1): Not Applicable		
BOILING POINT: Not Applicable			SPECIFIC GRAVITY (H ₂ O = 1): See Section II		
SUBLIMES @: Not Applicable			SOLUBILITY IN WATER = None		
EVAPORATI	ION RATE: Not Applicab	le	% VOLATILES BY VOLUME: None		
APPEARAN	CE AND ODOR: Solid	- Silver Gray Color -	No Odor		
IV. FIRE, E	EXPLOSION AND REA	ACTIVITY INFORMA	NTION		
FLASH POI	NT (WITH TEST METHO None	OD)	FLAMMABLE (EXPLOSIVE) LIMITS V/V% LEL: None UEL: None		
EXTINGUIS MEDIA	HING	This alloy is noncombe	ustible. Use extinguishing media appropriate to the surrounding fire.		
SPECIAL FI PROCEDUR	REFIGHTING RES	If this material is reduced to powder form, caution must be used to prevent fire or explosion. To extinguish a metal powder fire use dry sand, dry graphite or other class "D" fire extinuishing powder.			
UNUSUAL F	FIRE AND N HAZARDS	No unusual fire or explosion hazards are associated with this material.			
GENERAL F	REACTIVITY	This alloy is a stable material.			
INCOMPATI (MATERIAL	BILITY S TO AVOID)	Avoid contact with mineral acids and oxidizing agents which may generate hydrogen gas; the evolution of hydrogen may be an explosion hazard.			
HAZARDOU PRODUCTS	US DECOMPOSITION	Various elemental me handling operations. F	Various elemental metals and metal oxides may be generated from melting or dross handling operations. Refer to Section II for permissible exposure limits.		
V. HEALTH	HAZARD INFORMA	NTION			
			powder may result from melting, dross handling, casting, welding, ate airborne metal particulate during use of this material.		
PRIMARY ROUTE(S) OF EXPOSURE	INGESTION: Hand, clothing, food and drink contact with metal dust, fume or powder can cause ingestion of partial during hand to mouth activities such as eating, drinking, smoking, nail biting, etc.				
	SKIN: Skin contact with this material may cause, in some sensitive individuals an allergic response if elements such chrome, cobalt, copper and nickel are present. In the form of metal dust or powder, skin contact or abrasion may all cause irritation or dermatitis.				
	particulate (chips, dust o	al (dust, fume or powder) r powder) is always a pote ninated with metal particula	) may be dangerous to the eye and surrounding tissue. Airborne ential problem as well as inserting fingers into the eye socket if the ate.		

TOXICITY	There is no information on the toxicity of this alloy. Under normal handling and use of the solid form of this material there are a few health hazards. Cutting, welding, melting, grinding, etc. of this material will produce dust, fume or particulate containing the component elements of this material. Exposure to the dust, fume or particulate may present significant health hazards which are referable to the elemental constituents in Section II.  ACUTE: The metal dust and fumes of those elements in Section II can cause irritation to the skin, eye and mucous membranes. Contact with chrome, cobalt, copper and nickel may cause allergic skin reactions. As dust, powder or fume, exposure which abrades the skin can cause irritation and dermatitis. Injury to the eyes is generally a result of particulate irritation or mechanical injury to the cornea or conjunctiva by dust or particulate. Excessive inhalation of aluminum, cobalt, copper, manganese, nickel and vanadium can cause respiratory irritation, cough, bronchitis, chills, "fume fever" and asthma-like symptoms.
	mucous membranes. Contact with chrome, cobalt, copper and nickel may cause allergic skin reactions. As dust, powder or fume, exposure which abrades the skin can cause irritation and dermatitis. Injury to the eyes is generally a result of particulate irritation or mechanical injury to the cornea or conjunctiva by dust or particulate. Excessive inhalation of aluminum, cobalt, copper, manganese, nickel and vanadium can cause
EFFECTS OF OVEREXPOSURE	CHRONIC: Respiratory disease with symptoms ranging from shortness of breath and cough to permanent disability due to loss of lung function, fibrosis or subsequent effects on the heart may be caused by excessive exposure to dust or fumes containing cobalt, nickel, titanium and tungsten. Central nervous system depression has been identified with excessive manganese exposure. Nickel and chrome metal and certain compounds have been linked to nasal, bronchial and lung cancers. Aluminum and iron have been indicated to cause gastro-intestinal disorders and non-significant changes in the lung. Chronic health effects specific to an element(s) may be difficult to detect due to the numerous elemental constituents in this alloy.
CARCINOGENIC REFERENCES	Nickel and chrome metal and some of their compounds have been listed in the 3rd Annual Report on Carcinogens as prepared by the National Toxicology Program (NTP) as well as the International Agency for Research on Cancer (IARC) Monograph Series. Detailed information from these sources may be obtained from the following: IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man; Geneva, WHO, IARC 1972-1977 (Multivolume work) 49 Sheridan Street, Albany, NY 12219. Third Annual Report on Carcinogens, Summary, September, 1983 NTP 82-330 NTP Public Information Office, MD B2-04 Box 12233, Research Triangle Park, NC 27709.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE	Individuals who may have had allergic reaction or sensitivity to metals such as chrome, copper, cobalt and nickel may encounter skin rash or dermatitis if skin contact with this product occurs. Persons with impaired pulmonary function, airway diseases and conditions such as asthma, emphysema, chronic bronchitis, etc. may incur further disability if excessive concentrations of dust or fume are inhaled. If prior damage or disease to the Neurologic (nervous), Circulatory, Hematologic (blood) or Renal (kidney) systems has occurred, proper screening or examinations should be conducted on individuals who may be exposed to further risk if handling and use of this material causes excessive exposure.
	TRW-00359 _

INHALATION		reathing difficulty caused by inhalation of dust or fume requerform artificial respiration and obtain medical assistance at							
INGESTION		Swallowing metal powder or dust can be treated by having the affected person swallow large quantities of water and attempting to induce vomiting if conscious. Obtain medical assistance at once.							
SKIN		Skin cuts and abrasions can be treated by standard first aid. Skin contamination with dust or powder can be removed by washing with soap and water. If irritation persists obtain medical assistance.							
EYES		Dust or powder should be flushed from the eyes with copious amounts of clean water. If irritation persists obtain medical assistance. Contact lenses should not be worn if working with metal dusts and powders.							
VII. INDUSTRI	AL H	YGIENE CONTROL MEASURES							
VENTILATION	Lo	ocal exhaust ventilation should be used to control exposure t	o airborne dust and fume whenever possible.						
RESPIRATORY PROTECTION		se NIOSH approved respirators as specified by an Industr inction tests are recommended for users of negative pressur							
PROTECTIVE GLOVES		lear gloves to prevent metal cuts and skin abrasions particeneet, strip or tube.	ularly during handling of wrought forms, solid meta						
EYE PROTECTION	Wear safety glasses when risk of eye injury is present particularly during machining, grinding, welding, po handling, etc.								
OTHER PROTECTIVE EQUIPMENT		rotective clothing such as uniforms, disposable coveralls andling operations as appropriate to the circumstances of ex							
RECOMMENDE MONITORING PROCEDURES	D	ENVIRONMENTAL SURVEILLANCE: Exposure to the elements identi- fied in Section II can be best determined by having air  samples taken in the employee breathing zone, work  area or department.	MEDICAL SURVEILLANCE: Lung function tests, ches x-rays and routine physical examinations may be useful to determine effects of dust or fume exposure.						
VIII. ENVIROI	NMEI	NTAL PROTECTION INFORMATION							
STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED	si	n solid form this material poses no special clean-up problem hould be conducted with a vacuum system utilizing a high hould be taken to minimize airborne generation of powder roperly label all materials collected in waste container.	efficiency particulate air filtration system. Cautio						
WASTE DISPOSAL METHOD  Prior to disposal consider if the material has recovery value. State or federal regulations may require specific lal packing, storage, transportation and disposal procedures. Contact an Environmental Engineer or consultant fawith waste disposal regulations.									
ENVIRONMENT, HAZARDS	AL	In solid form this material poses no special environm significant impact on air and water quality. Airborne (discharge to streams, sewer systems, ground water, s If such potential for a spill exists it is advisable to develop	emissions, spills and releases to the environmen surface soil, etc.) should be controlled immediately						

# HANDLING PRECAUTIONS This product must be handled accordingly to the size, shape and quantity of material involved. Solid metal may require use of hoists, cranes, etc. Powders should be moved or transported to minimize spill or release potential. In solid form this material poses no special storage problems. Store metal and metal powder in a dry area. Do not store adjacent to mineral acids. Fine metal powder should be kept away from flames and sources of ignition. X. DOT SHIPPING REQUIREMENTS

SHIPPING NAME	Not Applicable	IDENTIFICATION NUMBER	Not Applicable
HAZARD CLASS	Not Applicable	LABEL(S) REQUIRED	Not Applicable

#### **ADDITIONAL INFORMATION**

The following is the label text which accompanies this product during shipment:

#### STAINLESS STEEL AND RELATED ALLOYS GROUP

INHALATION OF DUST OR FUME MAY CAUSE SERIOUS LUNG INJURY. SKIN, EYE AND MUCOUS MEMBRANE IRRITATION MAY OCCUR.

- The heat resistant alloy products identified above may contain, in varying concentrations, the following elemental
  constituents: aluminum, cobalt, chromium, copper, iron, manganese, molybdenum, nickel and tungsten. For specific
  concentrations of these and other elements present, refer to the Material Safety Data Sheet (MSDS) for this product.
- Inhalation of metal dust or fume generated by the use of these alloys may cause adverse health effects such as
  reduced lung function, nasal and mucous membrane irritation. Exposure to dust or fume generated by the use of these
  alloys may also cause eye irritation, skin rash and effects on other organ systems.
- Chrome, nickel and some of their compounds are listed in the 3rd Annual Report on Carcinogens as prepared by the National Toxicology Program (NTP) as well as the International Agency for Research on Cancer (IARC) Monograph Series. The following information is a summary of findings reported to date:

Element or Certain Compounds Evaluated or Both (Identified by Element Shown)

Determination/EvaluationChromeNickelEvidence of carcinogenicity to humans:SufficientLimitedEvidence of carcinogenicity to animals:SufficientSufficient

 Avoid breathing dust or fume. If the use of this material produces dust or fume, use appropriate ventilation controls, personal protective equipment or both. For additional information refer to the Material Safety Data Sheet (MSDS) for this product.

TRW-00361

### Content & Description Of Ulbrich Stainless Steels & Special Metals, Inc. Material Safety Data Sheets

ENVIRONMENTAL ENGINEERING DEPARTMENT
Ulbrich Stainless Steels & Special Metals, Inc.
57 Dodge Avenue
North Haven, CT 06473
(203) 239-4481

#### SECTION I - PRODUCT IDENTIFICATION

Chemical Name: A name consistent with the nomenclature system of the International Union of Pure & Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS).

Trade Name: The name the product is sold by, i.e., the product name.

Chemical Family: A general designation for a group of elements or compounds.

Formula: The scientific designation for an element or compound.

#### **SECTION II - HAZARDOUS CONSTITUENTS**

Constituent(s): The chemical component(s) of the product. A hazardous constituent is a chemical which is a physical hazard or health hazard.

Percent: The amount of component or range present in the product and expressed on a weight basis.

**CAS Number:** A specific chemical identification number assigned by the Chemical Abstracts Service. The lack of a CAS Number for any given chemical or mixture indicates that a number may not have been assigned.

NIOSH RTECS Number: The National Institute for Occupational Safety & Health (NIOSH) Registry of Toxic Effects of Chemical Substances (RTECS) Access Number for a specific element or compound's toxicological data.

**OSHA PEL:** The Occupational Safety & Health Administration (OSHA) Permissible Exposure Limit (PEL) – usually a time weighted average (TWA) ceiling limit (C) or maximum peak exposure limit (P) expressed as PPM (parts per million) or as Mg/M³ (milligrams per cubic meter).

**ACGIH TLV:** The American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) – in many cases, identical to the OSHA PEL. ACGIH also recommends a short term exposure limit (STEL) for certain substances that should not be exceeded at any time.

#### **SECTION III - PHYSICAL PROPERTIES**

Freezing Point: The temperature at which a liquid changes to a solid. A range may be given.

Melting Point: The temperature at which a solid changes to a liquid. A range may be given.

Boiling Point: The temperature at which a liquid changes to a vapor. Usually expressed at sea level pressure (760mmHg).

**Sublimes** @: The temperature at which a solid changes directly to vapor.

**Evaporation Rate:** Indicated as faster or slower than Ethyl Ether unless stated.

**Appearance and Odor:** A description of the product in terms of form, color, odor, etc.

Vapor Pressure (mmHg): The pressure of a saturated vapor above a liquid expressed as mmHg at 20°C, unless stated at a different temperature.

Vapor Density (Air = 1): The relative density of a vapor or gas compared to an equal volume of air. Air is equivalent to 1.0.

Specific Gravity (H₂O = 1): The ratio of the weight of a volume of material to the weight of an equal volume of water. Water is equivalent to 1.0 @ 4°C. The term "DENSITY" describes the concentration of matter as the mass per unit volume, e.g., pounds/cubic inch.

Solubility In Water: The degree to which a material is capable of dissolving in water.

% Volatiles By Volume: The volumetric percentage of volatile compounds in a product.

#### SECTION IV - FIRE, EXPLOSION AND REACTIVITY INFORMATION

Flash Point (With Test Method): The lowest temperature at which a vapor/air mixture will propagate a flame above the surface of the material being tested.

Flammable (Explosive) Limits V/V%:

LEL: LOWER EXPLOSION LIMIT: The lowest vapor concentration in air at which ignition by spark or flame will occur.

UEL: UPPER EXPLOSION LIMIT: The highest vapor concentration in air at which ignition by spark or flame will occur.

Extinguishing Media: The type of fire extinguishing media to be used taking into account the type of chemical and its flammable characteristics.

Special Firefighting Procedures: Indicates equipment to protect firement from toxic products of combustion.

Unusual Fire and Explosion Hazards: Chemical changes that may occur under heat or fire conditions.

General Reactivity: The tendency of a material to undergo chemical reaction with the release of energy.

Incompatibility (Materials To Avoid): Materials which could cause dangerous reactions.

Hazardous Decomposition Products: The breakdown of a material into compounds or elements that may have specific hazard properties different than the original material.

#### SECTION V - HEALTH HAZARD INFORMATION

#### Primary Route(s) Of Exposure:

Inhalation: The breathing in of a gas, dust, fume, vapor, or mist as a contribution to exposure.

Ingestion: The swallowing of a substance as a contribution to exposure.

Skin: The contribution to exposure by the cutaneous route, either skin absorption or skin contact.

Eyes: The effect of chemical exposure on the eye.

**Toxicity:** The available toxicological data usually expressed as lethal dose or lethal concentration of the material or its components. Most toxicity test results are from exposure tests conducted on animals such as rats or mice and caution is recommended in making direct comparison to human beings.

#### **Effect Of Overexposure:**

Acute: Rapid effects of exposure with severe symptoms.

Chronic: Effects due to exposure that develop slowly over a long period of time or which recur frequently.

Carcinogenic References: Available references which indicate the potential for a material to cause cancer in man or animals.

Medical Conditions Aggravated By Exposure: Medical conditions that warrant consideration regarding exposure to a toxic substance.

#### SECTION VI - EMERGENCY & FIRST AID PROCEDURES

Inhalation: Emergency action to address adverse effects due to inhalation of a hazardous material.

Ingestion: Emergency action to address adverse effects due to ingestion of a hazardous material.

Skin: Emergency action to address adverse effects due to skin contact or absorption of a hazardous material. Eyes: Emergency action to address adverse effects or injury to the eye due to contact with a hazardous material.

#### SECTION VII - INDUSTRIAL HYGIENE CONTROL MEASURES

Ventilation: Recommended type of ventilation for control of gases or particulate.

**Respiratory Protection:** General information on the type of respiratory protection recommended. **Protective Gloves:** Recommendation for protection to prevent hand contact with the material.

Eye Protection: Recommendation to protect against eye injury.

Other Protective Equipment: Other personal protective equipment (PPE) such as clothing, safety shoes, etc. that may be appropriate to protect against injury or exposure.

#### **Recommended Monitoring Procedures:**

Environmental Surveillance: Personal air sampling or related procedures to evaluate exposure of an individual.

Medical Surveillance: Biological monitoring or related tests/examinations to evaluate the effects of exposure to an individual.

#### SECTION VIII - ENVIRONMENTAL PROTECTION INFORMATION

Steps To Be Taken If Material Is Released Or Spilled: Specifically refers to containment, cleanup and control.

Waste Disposal Method: Refers to recommended disposal practices or applicable regulatory requirements when known.

Environmental Hazards: Refers to information such as aquatic or vegetative toxicity, ambient air pollution concerns, etc. which are available from regulatory or published technical services.

#### **SECTION IX - SPECIAL PRECAUTIONS**

**Handling Precautions:** Safe movement of the product may require specific handling procedures. **Storage Precautions:** Safe storage of the product may require specific storage procedures.

#### **SECTION X - DOT SHIPPING REQUIREMENTS**

Shipping Name: The approve Department of Transportation (DOT) Shipping Name where applicable.

Hazard Class: The approved DOT Hazard Class where applicable.

Identification Number: Either the United Nations or North American approved identification number referenced by DOT.

Label(s) Required: The required DOT shipping label where applicable.

#### **ADDITIONAL INFORMATION**

This section is reserved for remarks which may not be specifically addressed in preceding sections such as Product Hazard Warnings & Label Information.

All information, recommendations, and suggestions contained in these Material Safety Data Sheets concerning our products are believed to be accurate as of the date issued and are based upon information provided by others. Since the actual use of our products by others is beyond our control, Ulbrich Stainless Steels and Special Metals, Inc., service centers, and affiliate companies makes no warranty, expressed or implied, with respect to this information provided and disclaims all liability for any loss or injury arising from reliance upon this information or use of this product. ULBRICH STAINLESS STEELS & SPECIAL METALS, INC. will periodically update this MSDS, however it is the user's responsibility to evaluate the health hazards associated with their processing operations and take appropriate measures to ensure worker safety.



Ulbrich Stainless Steels and Special Metals, Inc. 57 Dodge Avenue North Haven, CT 06473 (800) 243-1676 (203) 239-4481

#### U.S. DEPARTMENT OF LABOR

रित्राण जेत्रवर्णस्व इस्त्रीस्थानम्, इस्त्रीम्बर्ग

Occupational Safety and Health Administration

## MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1915).

None None Contraction	Canti	nued on t	everse side)	in an anthre transportation, which a parameter of the anthread and the same	Form (	DSHA-20
NUSUAL FIRE AND EXPLOSION HAZARDS					TR	: : : W-00
NONE						
None exhibited						
None exhibited			FLAMMABLE LIN	rits Lai		Uel
SECTION IV -	FIRE	ANO E	XPLOSION HAZ	ARD DAFA		
PPEARANCE AND ODOR White Vi	scou	s Liqu	uid- Slight (	)dor		
DEUBILITY IN WATER	10	08	<u> </u>			
APC 9 DENSITY (AIR=1)			EVAPORATION RAT		<u> </u>	
APOR PRESSURE (mm Hg.)			PERCENT, VOLATIL BY VOLUME (%)			
DILING POINT ("F.)		_	SPECIFIC GRAVITY		· · · · · · · · · · · · · · · · · · ·	
SEC	CTION	V 111 - P	HYSICAL DATA		·	
		Section	on N/A			
						(9) (113)
HAZARDOUS MIXTURE	S OF C	THER LIC	UIDS, SOLIDS, OR G.	ASES	<u> </u>	TEV (Units)
MERS		<del></del>	-			
DEVENTS	-		PLUS COATING OR	CORE FILLA		
Energy E			METALLIC COATING	35		
ATA LYST			ALLOYS		<del>-</del>	-
CMENTS			BASE METAL			 
PAINTS, PRESERVATIVES, & SOLVENTS	*	_Unitel	ALLOYS AND	METALLIC COATINGS	-	(Units)
SECTION	111 -		RDOUS INGREDI	ENTS		T-3-5
Synthetic Liquid Polyme	<u> </u>		- (CH ₂ -GI	X = P;		
Cationic Polyacrylamide		spersi	:	3000		
194 South Main Street,						
WASTEWATER SYSTEMS ENGI	ode;			617 584-7300		
ANUFACTUREN'S NAME		D. T. 1. A.		EMERGENCY TELEPHO	NE NO.	
			TON I			

1		ECTION V	• HEAI	LTH HAZARD DATA
	Very	low in	acute	oral toxicity
)	Slig	ht skin	irrit	ation, protect skin with gloves,
	mask,	and gla	sses.	
FMEDSENDY AND	FIRST AID PROCED If i		drin	k plenty of water
	In_e	yes, flu	sh_wi	th large quantities of water.
1			····	
1		SECTION	VI . RI	EACTIVITY DATA
L. TAPULTY	· ,			S TO AVOID
	UNSTABLE			
W. CHOATAHIL.	Y Plairrials 10 avoid)	XXX		special requirements
VAZARDOUS DEC	Cation	nic poly	mars -	iffect performance no health hazard
			T	CONDITIONS TO AVOID
FOR THE BUT AT LON			<del></del>	
	WILL NOT		1_X	
i. <u> </u>				
	SECT	rion VII -	SPILL	OR LEAK PROCEDURES
JEFS 10 BE TAN	EN IN CASE MATER	AL IS MELEA	SED OR S	PILLED
Cover with	sand and r	emove at		sh with water until all material is
		C.IIIO V C. OI	<u> </u>	March Water Intil all material is
washed	METHOD Norm	al dispo	osal f	or solid inert materials
			<u> </u>	Was and delivered the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of
	andre ( = 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1		<del></del>	
	SECTION	VIII - SPE	CIAL P	ROTECTION INFORMATION
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VEHTH ATTON	LOCAL EXHAUST	Х		SPECIAL
	MECHANICAL /G	rrerei) dvisable		other essential
SHOTE STOPE SLOV	Required			May use glasses
NO WAS PROTECTIV	E EQUIPMENT			
	HE TAKEN IN HANG			CIAL PRECAUTIONS
Keep in a	cool place.			
- Cross		<del></del>		
Keep conta	iners close	d.		

PAG5 (2)

Form OSHA-20

# AMERICAN STEEL AND ALUMINUM CORPORATION Material Safety Data Sheet

Issue Date April 17, 1986	Identification Number C Alloy & Tool
Emergency Phone Number	or contact your nearest
(617) 762-8014	American Steel office
Form	
Bar, Sheet, Plate, Tubir	ng, Structurals, Pipe, Grating
040 GALV 1010 1020 436 235 5	515-70.T-1.1050.A120.A106.A53
	April 17, 1986 Emergency Phone Number (617) 762-8014

CARS DIV TRA INC 11 AMES OF CARDRIGON, MA 00000

#### I. INGREDIENTS

Material or Component	CAS Number	% Weight	Exposur	e Limits
Base Metal	* 3 *	# Ne	OSHA PEL (mg/m³)	ACGIH TLV (mg/m²)
Iron (Fe)	7439-89-6	Balance	10 (Fe ₂ O ₃ Fume)	5.0 (Fe ₂ O ₃ Fume)
Alloying Elements				,
Aluminum (Al)	7429-90-5	0.10 - 1.8	None Listed	5.0 as welding fume
Carbon (C)	7440-44-0	0.01 - 1.5	None Listed	None Listed
Chromium (Cr)	7440-47-3	0.01 - 12	1.0 as chrome	0.5 as chrome
Cobalt (Co)	7440-48-4	8 Max.	0.1 as cobalt and tume	0.05 as fume
Copper (Cu)	7440-50-8	0.04 - 0.7	0.2 as copper; 1.0 as dust	0.2 as fume; 1.0 as dus
Lead (Pb)	7439-92-1	0.15 - 0.35	0.05 as fume & dust	0.15 as dust and fume
Manganese (Mn)	7439-96-5	0.05 - 2.0	5 as manganese	5 as dust; 1 as fume
Molybdenum (Mo)	7439-98-7	0.01 - 1.10	15 as insoluble compds	10 as insoluble compo
Nickel (Ni)	7440-02-0	0.01 - 10	1.0 as Nickel	1.0 as Nickel
Phosphorous (P)	7723-14-0	0.15 Max	0.1 as Phosphorous	0.1 as Phosphorous
Silicon (Si)	7440-21-3	0.15 - 2.20	None Listed	10 total dust
Sulfur (S)	7704-34-9	0.001 - 0.35	13 sulfur dioxide	5 sulfur dioxide
Tungsten (W)	7440-33-7	0 - 18	None Listed	5 insoluble compds
Vanadium (V)	7440-62-2	0.01 - 1.0	0.5 dust; 0.1 fume	0.05 dust and fume
Zinc (Zn) coating	1314-13-2	10 Max	5.0 as fume	5.0 as fume

Note: The above listing is a summary of elements used in alloying steel. Various grades of steel will contain different combinations of these elements. Trace elements may also be present in minute amounts.

#### II. PHYSICAL DATA

Material is (At Normal Con	ditions)					Appearance and Odor	
☐ Liquid	Ø	Solid		Gas	□ Other	Gray-Black With Metallic Lus	stre — Odorless
Acidity/Alkalinity		Meltin	a Point	Approx 2750°F	Spécific G	ravity $(H_2O = 1) - 7$	Vapor Pressure (mm Hg at 20°C)
ph = NA		Boiling	Point	NA °F	Solubility i	n water (% by weight) NA	NA

#### III. PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection	Handa, Arma, and Body
NIOSH approved dust/mist/fume respirator should be used	Use appropriate protective clothing such as welders aprons
during welding or burning if OSHA PEL or TLV is exceeded.	& gloves when welding or burning. Check local codes.
Eyes and Face	Other Clothing and Equipment
Safety glasses should always be worn when grinding or cutting:	As required
face shields should be worn when welding or burning.	

#### IV. EMERGENCY MEDICAL PROCEDURES

Inhalation:	Remove to fresh air; if condition continues, consult physician.	
Eye Contact:		<b>)</b> .
Skin Contact:	If irritation develops, remove clothing and wash well with soap and water. If condition medical attention.	
Ingestion:	If significant amounts of metal are ingested, seek medical attention.	TRW-00367

Front

#### V. HEALTH/SAFETY INFORMATION

#### HEALTH

Steel products in the natural state do not present an inhalation, ingestion, or contact health hazard. However, operations such as welding, burning, sawing, brazing, grinding, and possibly machining, which results in elevating the temperature of the product to or above its melting point or results in the generation of airborne particulates may present hazards. The above operations should be performed in well ventilated areas. The major exposure hazard is inhalation.

Effects of overexposure are as follows:

Acute: Excessive inhalation of metallic fumes and dusts may result in irritation of eyes, nose, and throat. Also high concentrations of furnes and dusts of iron-oxide, manganese, copper, zinc, & lead may result in metal furne fever. Typical symptoms consist of a metallic taste in the mouth, dryness and irritation of the throat, chills and fever, and usually last from 12 to 48 hours.

Chronic: Chronic and prolonged inhalation of high concentrations of tumes or dust of the following elements may lead to the conditions listed opposite the element:

Iron (iron-oxide) - Pulmonary effects, siderosis.

Manganese - Bronchitis, pneumonitis, lack of coordination.

Chromium - Various forms of dermatitis, inflammation and/or ulceration of upper respiratory tract, and possibly cancer of nasal passages and lungs. Based on available information, there does not appear to be any evidence that exposure to welding fume induces human cancer.

Nickel - SAME AS CHROMIUM.

Copper - Pulmonary effects.

Vanadium - No reported cases of exposure to vanadium.

Cobalt - Inhalation of cobalt dust may cause an asthma-like disease with cough and dyspnea.

Molybdenum - Pain in joints, hands, knees and feet.

Tungsten - Some evidence of pulmonary involvement such as cough.

Lead - Prolonged exposures can cause behavioral changes, kidney damage, periphery neuropathy characterized by decreased hand-grip strength and adverse reproductive effects.

Zinc - None reported.

	FIRE A	ID EXPLOSION	٧	
	Auto Ignition Temperature	Flammable Limite	in Air	Extinguishing Media
Flash Point NA °F	NA °F	Lower N Upper N	A % A %	NA NA
ire and Explosion Hazards	None		Extinguish	ing Media Not to be Used NA
	RE	ACTIVITY		
wolley ☑ Stable ☐ Unstab	incompatibility (Materials to Aveid) Ne Reacts with strong aci	ds to form hyd	rogen ga	ıs.
onditions to Avoid	en cutting welding burning	a Well Ventila	ted id gener	ation of airborne dusts and fumes.

#### VI. ENVIRONMENTAL

Spill or leak procedures	Special Precautions: Use good housekeeping practices to prevent accumulation of dust and to keep
NA	airborne dust to a minimum.
Waste Disposal Method	
Dust, etc. — for	llow federal, state, and local regulations regarding disposal.

#### VII. ADDITIONAL INFORMATION

DISCLAIMER-

American Steel and Aluminum makes no warranties, express or implied, including, but not limited to implied warranties of merchantability and fitness for a particular purpose.

The Information contained in this Material Safety Data Sheet (MSDS) is believed to be correct, but no representations, guarantees or warranties of any kind are made as to its accuracy. Users assume all risk and liability of any use, processing, or handling of any material. Variations in methods, conditions, equipment used to store, handle or process the material and hazards connected with the use of the material are solely the responsibility of the user.

This MSDS is intended to be used solely for the purpose of satisfying informational requests. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe workplace to examine all aspects of its operation, and to determine if or when precautions in addition to those described herein are required.

#### MATERIAL SAFETY DATA SHEET

USG INDUSTRIES, INC. 101 S. Wacker Drive Chicago, Illinois 60606

Emergency phone Day (312)321-4383 Night (312)321-4382

#### SECTION I

PRODUCT: CARLISLE HP Recovery Board CHEMICAL FAMILY: Wood Fiber (Mixture)

SECTION II
PRODUCT INGREDIENTS

(As Required by 29 CFR 1910.1200)

MATERIALS:

TLV

CAS #

7

Wood Fiber Asphalt 5mg/M³

None assigned 08052-42-4 92 - 93

5mg/M³(fumes) 08

7 - 8

SECTION III
PHYSICAL DATA

SOLUBILITY IN WATER: Nil

SPECIFIC GRAVITY  $(H_20 = 1): 0.2 - 0.3$ 

APPEARANCE AND ODOR: Brown to black colored board, low odor

SECTION IV
FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED): None.

AUTOIGNITION TEMPERATURE: Variable. 390-500 OF

EXPLOSION LIMITS: Wood (saw) dust: Lower: 0.035 oz/ft3

Wood dust requires 0.040 Joules/minutes of energy for ignition and can produce

an explosion pressure of 113 psig max.

EXTINGUISHING MEDIA: Water, foam

UNUSUAL FIRE AND EXPLOSION HAZARDS: Wood dust is readily combustible. If saw dust is being produced from this product, it should be kept in a cool, dry place away from ignition sources. Hot, humid storage can result in spontaneous heating. Partially burned or scorched wood dust can be hazardous to store. Avoid contact with oxidizing agents and with drying oils.

SECTION V
HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE:

ACUTE: None known

CHRONIC: None known

EMERGENCY AND FIRST AID PROCEDURES:

EYES:

Flush saw dust from eyes with water. If irritation

persists see physician.

SKIN:

Wash with soap and water.

INHALATION: Remove from exposure

INGESTION: Call physician

TRW-00369

PRODUCT: Various Wood Fiber Products

Page 2

#### **SECTION VI** REACTIVITY DATA

STABILITY: Stable

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon Dioxide, Carbon Monoxide

HAZARDOUS POLYMERIZATION: Will not occur

#### **SECTION VII** SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Pick up WASTE DISPOSAL METHOD: In accordance with Federal, State and local regulations.

#### **SECTION VIII** SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Nuisance dust respirator should be worn while sawing product VENTILATION: Local exhaust at point of power sawing PROTECTIVE EQUIPMENT: Safety glasses

#### SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep dry.

For further technical information contact: Product Manager, Dept. 134

Wood Fiber Division USG Industries, Inc. 101 S. Wacker Drive. Chicago, IL 60606

312-321-5855

250P

#### BOWMAN DISTRIBUTION MATERIAL SAFETY DATA SHEET

#### **SECTION I**

PRODUCT NAME  CASE-DEERE GREEN ENAMEL	BOWMAN PART NO. 24719 (page 1 of 3)
SUPPLIER  Bowman Distribution, Barnes Group Inc.	EMERGENCY TELEPHONE NO. (216) 381-7200
ADDRESS 850 East 72nd Street, Cleveland, OH 44103	DATE 1/26/88
HAZARDOUS MATERIAL DESCRIPTION, PROPER SHIPPING NAME, HAZARD Aerosol Spray Paint, Consumer Commodity, ORM-D	CLASS, HAZARD ID NO. (49 CFR 172.101)
ADDITIONAL HAZARD CLASSES (as applicable)  N.A.	
1	MULA <b>8295</b>

#### **SECTION II - HAZARDOUS INGREDIENTS**

OLO HOM HALAMBOOD MUMBERNO						
CAS REGISTRY NO.	%W	%V	CHEMICAL NAME(S)		LV Mg/M³	Listed as a Carcinogen in NTP, IARC or OSHA 1910(z) (specify)
67-64-1	30-40		Acetone	750	1750	No
1330-20-7	5-10		Xylene	100	435	No
64-17-5	5-10		Ethyl Alcohol	1000	1900	No
123-42-2	5-10		Diacetone Alcohol	50	240	No
78-93-3	5		Methyl Ethyl Ketone	200	590	No
	23		Propellant: Propane/Isobutane			No

#### **SECTION III - PHYSICAL DATA**

BOILING POINT 133 .F	c	SPECIFIC GRAVITY (H ₂ O = 1)	.90		
VAPOR PRESSURE 186 @°F _20_°C X mm He	psi	PERCENT VOLATILE BY VOLUME (%)	85-90	PERCENT SOLID BY WEIGHT (%)	15-20
VAPOR DENSITY (AIR = 1)	N.A.	EVAPORATION RATE ( = 1)	N.A.		
SOLUBILITY IN WATER	N.A.	pH =	N.A.		
APPEARANCE AND ODOR Paint, solvent odor.				MATERIAL IS: LIQUID	

#### **SECTION IV - FIRE AND EXPLOSION HAZARD DATA**

FLASH POINT	method used	FLAMMABLE LIMITS	LEL	UEL
<u> </u>	°C		1.1	N.A.
EXTINGUISHING MEDIA				
Carbon Dioxide, Dry Ch	emical, or Alcohol Foam			
SPECIAL FIRE FIGHTING PR	OCEDURES			
Water spray may be inef	lective. Water may be used to	cool closed containers to prevent p	pressure build-up and	d possible autoignition or
explosion when exposed	to extreme heat. If water is a	used, fog nozzies are preferable.		
UNUSUAL FIRE AND EXPLO	SION HAZARDS			
Vapors are heavier than	air and may travel along the	ground or may be moved by ventilat	ion and ignited by pi	lot lights, other flames,
sparks, heaters, smoking	, electric motors or other ign	nition sources at locations distant fro	om material handling	point.
, ,		`		

F	SUEBEVA E A	<del>-</del>			<u>v</u>	- HEALTH	1 HA			
	OVEREXPOSUR lation of vapors				spir	atory irritation.		_	<b>HRESHOLD LIMIT VALUE</b> ERMISSIBLE EXPOSURE LIM	See Section II
						consciousness, and	d	•	THER LIMIT	11
even asphyxiat	ion.			<u> </u>				L	I FICH CHAIL!	
PRIMARY ROL	ITES OF ENTRY	Y Int	alation 🗶	Skin Co	nta	ct Other (spec	ify)			
	AND FIRST AID			thing is d	diffic	cult, administer oxy	ygen. If br	eath	hing has stopped, give artificia	Il respiration.
Keep person w	arm, quiet and ç	get me	dical attenti	on.	-					
			SE	PAGE	3 FC	OR ADDITIONAL S	ECTION	V IN	FORMATION	
						VI - REAC	CTIVI	T'	Y DATA	
STABILITY	UNSTABLE		CONDITI	ONS TO	AV	OID				
	STABLE	x	Heat, spa	rks and c	per	n flame.				
	LITY (materials with: strong oxid		/	heat.						
	DECOMPOSITI			/*-						
11.A.	<del></del>	MA	YOCCUR	· · · · · · · · · · · · · · · · · · ·		CONDITIONS	DIOVA O			<del></del>
HAZARDOUS POLYMERIZAT	ION	WI	LL NOT OC	CUR		N.A.				
	TAKEN IN CAS	-			_		LEAK	<u> </u>	PROCEDURES	
							I and tran	ster	r to a closed container. Elimin	ate all ignition sources.
N.A. RCRA HAZARI	erfund) REPOR				1					
N.A.	0.4400.004400			[SZ]	Tho	oretical	221			
tas packaged. r	GANIC COMPO minus water)	UND	(VOC)				T.,		(and theoretical)	
	SEC.		NI VIII			lyticallb/ga	_	.A.	(see theoretical) ON INFORMATI	
	PROTECTION	(spec	ify type)							UN
NIOSH/MSHA	jointly approved	self-c	ontained b	reathing	app	paratus with a full fa	ace piece	ope	erated in pressure demand.	
		<del></del>								
VENTU ATION			CAL EXHAUM IN THE CAL EXHAUM IN THE CAL EXHAUM IN THE CAL EXHAUM IN THE CALL EXHAUM IN TH			y rate) <b>posure below TLV</b> (:	s).	ŀ	SPECIAL	
VENTILATION						specify rate)	<u>-7·</u>	1	OTHER	
	GLOVES (speci	fy type	)						FECTION (specify type) splash goggles in compliance	with OSMA regulations
Chemical resist	CTIVE EQUIPM	MENT					Chemi	Call	spiasn goggies in compliance	with OSHA regulations.
N.A.		SE	E PAGE 3 F	OR ADD	HTI	ONAL SECTION V	III INFOR	MA.	TION	
			SECTI	ON	IX	- SPECIA	L PR	EC	CAUTIONS	
	S TO BE TAKEN	IN H	ANDLING A	ND STC	RIN					
23			4., 50, 34							
OTHER PRECA				<del></del>	_					
Store large qua	ntities in buildir	ngs pro	otected for s	storage o	of N	FPA Class 1C flam	mable liqu	uids	<b>3.</b>	<b>-</b>
										TRW-00372

BOWMAN DISTRIBUTION, BARNES GROUP INC. 850 East 72nd Street, Clearland, CH 44103 Englands, Tatalian, Street, 101-7200 26-88

# BOWMAN DISTRIBUTION MATERIAL SAFETY DATA SHEET

#### **SECTION I**

PRODUCT NAME	BOWMAN PART NO.			
CASE-DEERE GREEN ENAMEL	24719 (page 3 of 3)			
SUPPLIER Bowman Distribution, Barnes Group Inc.	EMERGENCY TELEPHONE NO. (216) 391-7200			
ADDRESS 850 East 72nd Street, Cleveland, OH 44103	DATE 1/26/88			

#### **SECTION V - HEALTH HAZARD DATA**

ROUTES OF ENTRY CARCINOGENICITY	▼ Inhalation     NPT	Skin	Ingestion OSHA	X Eyes
	Ingredients for product(s)	listed in Section II are not fo	und in these agencies' lists.	
SYMPTOMS OF OVERE	XPOSURE:			
Acute:				
	essive inhalation of vapora unconsciousness and ever		tory irritation, dizziness, weak	ness, fatigue, nausea,
EYE CONTACT —	an cause severe irritation,	redness, tearing, blurred vis	ion.	
SWALLOWING — c	an cause gastrointestinal i	rritation, nausea, vomitting, o	diarrhea.	
SKIN CONTACT —	can cause irritation for so	me persons.		
Chronic:				
None known for pro	duct(s) in Section II.			
damage. Severe ove	rexposure in laboratory ar	imals has also caused heart	re to solvents with permanent and liver abnormalities and da he contents may be harmful o	mage to kidneys, lungs,
Medical Conditions Generally Aggravated	by Exposure:			
Can cause allergic r	espiratory and/or skin rea	ction.		
FIRST AID — EMERGEN	ICY PROCEDURES:			
IF BREATHED — reme respiration and seek m		If breathing is difficult, admir	nister oxygen. If breathing is a	lopped, give artificial
IF IN EYES — flush wi	th water for 15 minutes wh	lie occasionally holding eyei	ids open. Get medical attentio	n.
		piration of material into lungs lon/Posion Control Center.	s can cause chemical pneumo	nitis, which can be fatal).
IF ON SKIN — wash w	rith soap and water or varie	ous hand cleaners, and wash	clothing before re-use.	

#### **SECTION VIII - SPECIAL PROTECTION INFORMATION**

#### RESPIRATORY PROTECTION:

For casual/occasional use — to avoid breathing vapors or spray mist, open windows and doors or use other means to ensure fresh air entry during application and drying. If you experience eye watering, headaches, or dizziness, increase fresh air, wear respiratory protection (NIOSH/MSHA TC23C or equivalent), or leave the area.

#### **VENTILATION**

For regular/continuous use — provide sufficient mechanical (general) and/or local exhaust ventilation to maintain exposure below TLV's in Section II.

#### PROTECTIVE GLOVES:

Wear chemical resistant gloves, such as neoprene, if skin contact is to be avoided.

#### EYE PROTECTION:

Chemical splash goggles, in compliance with OSHA regulations, are advised.

#### OTHER PROTECTIVE EQUIPMENT:

Where special or unusual conditions exist, the expert assistance of an industrial hygienist should be sought.

#### **WORK/HYGENIC PRACTICES:**

Wash hands before eating or using washroom. As with all chemicals, minimize personal contact and breathing of vapors.

TRW-00373

# MATERIAL SAFETY DATA SHEET **CENTURY® CAST BRONZE**

#### SECTION I. MATERIAL DESCRIPTION

Copper Alloy Ingots, containing Copper, Tin, Lead, Zinc, Iron, Antimony, Nickel, Aluminum, Manganese, Silicon, and Niobium.

Other Designations: ALLOYS. (See enclosed Alloy Designation Table.)

C83450 C83600 C83800 C84400 C84500 C84800 C85200 C85400 C85700 C86200 C86300	C86400 C86500 C87300 C87500 C87600 C90300 C90500 C90700 C91100 C91300 C91600	C92200 C92300 C92400 C92500 C92600 C92700 C92900 C93200 C93400 C93700 C93800	C95200 C95300 C95400 C95410 C95500 C95800 C96200 C96400 C97300 C97400
C86300	C91600	C93800	C97600 C97800 C99700 C99750

#### SECTION II. HAZARDOUS INGREDIENTS

	FUME THRESH	IOLD VALUES
	OSHA.	ACGIH
	8 HR TWA	8 HR TWA
		(TLV)
Copper	0.1 mg/m ^a	0.2 mg/m ^a
Tin	2 mg/m ^a	2 mg/m³
Lead	50 µg/m³	150 μg/m³
Zinc	5 mg/m ^a	5 mg/m ^a
Iron	5 mg/m³	5 mg/m ^a
Antimony	0.5 mg/m ^a	0.5 mg/m ^a
Nickel	1 mg/m ^a	1 mg/m³
Aluminum	10 mg/m³	10 mg/m³
Manganese	1 mg/m ^a	1 mg/m³
Silicon	10 mg/m ^a	10 mg/m³
Niobium	no established limit	no established limit

#### SECTION III. PHYSICAL DATA

Physical Form:

**Boiling Point:** 

Not Applicable

Freeze-Melt Temperature: Vapor Pressure:

Approximately 1500° - 2100°F (816° - 1149°C)

**Evaporation Rate:** 

Not Applicable Not Applicable

Specific Gravity:

7.5 - 9.0

Density:

Approximately .3 lb/inch^s

Solubility in H₂O:

Not Applicable

Color:

Yellow to Red

Odor:

None

#### SECTION IV. FIRE AND EXPLOSION DATA

Flashpoint

Not Applicable

Auto-Ignition Temperature
Not Applicable

Flammability Limits In Air Not Applicable

There are no fire or explosion hazards with these alloys in solid form. In case of fire use extinguishing agents appropriate for the surroundings or materials. In no case should any water be poured on the fire for fear of explosion of the molten metal if it comes in contact with water. Fire fighters should wear full protective clothing and, where conditions warrant, NIOSH approved self-contained breathing apparatus. See Sections V and VII.

#### SECTION V. HEALTH HAZARD DATA ...

The primary hazard associated with handling of these compositions is exposure to Copper, Lead and Zinc compounds when melting, pouring, cut-off, and grinding these alloys in a foundry. The work area should be carefully monitored to evaluate potential exposures to airborne metals contained in the alloys when they are handled.

#### SECTION VI. REACTIVITY DATA

TLV: See Section II

Primary Routes of Entry: Inhalation of dust or fumes.

Copper and Manganese: Under normal handling and use, exposure to the solid form of copper alloy presents few health hazards. Thermal cutting, melting, machining/grinding may produce fumes or dust containing the component elements and breathing these fumes or dust may present potentially significant health hazards. The exposure levels in Section II are relevant to fumes and dust. Fumes of copper and manganese may cause metal fume fever with flu-like symptoms, and copper may cause skin and hair discoloration, irritation of the upper respiratory tract, metallic taste in the mouth and nausea. Over-exposure to manganese fumes can cause chronic manganese poisoning. The central nervous system is the chief site of injury. Chronic manganese poisoning is not a fatal disease although it is extremely disabling.

Lead — Short-Term Exposure: Primary routes of entry are inhalation of dust or fumes and ingestion through contamination of hands or face. Lead is an accumulative polson. Inhalation effects of exposure to fumes or dust of inorganic lead may not develop quickly. Symptoms may include decreased physical fitness, fatigue, sleep disturbance, headache, aching bones and muscles, constipation, abdominal pains and decreasing appetite. The effects are reversible and complete recovery is possible. Inhalation of large amounts of lead may lead to seizures, coma and death.

Lead — Long-Term Exposure: Long-term exposure to lower levels can result in a buildup of lead in the body and more severe symptoms. These may include anemia, pale skin, a blue line at the gum margin, decreased hand-grasp strength, abdominal pain, severe constipation, nausea, vomiting and paralysis of the wrist joint. Prolonged exposure may also result in kidney damage. If the nervous system is affected, usually due to high exposures, the resulting effects include severe headaches, convulsions, coma, delirium, and death. In non-fatal cases, recovery is slow and not always complete. Alcohol ingestion and physical exertion may bring on symptoms.

Iron and Tin: Chronic overexposure to iron oxide or tin fumes may cause an apparent benign pneumoconiosis. In the case of iron oxide, this is called siderosis and stannosis for tin exposure.

SECTION VI.	REACTIVITY	DATA	(continued)
-------------	------------	------	-------------

Nickel: Short-term exposure can cause lung irritation, shortness of breath, coughing and wheezing. Long-term exposure may result in impairment of sense of smell, chest pain, destruction of nasal tissue, and asthmatic lung disease. Allergic sensitivity may also develop. Nickel hase been identified as a potential cancer causing agent.

Zinc: Exposure to fumes may cause "Metal Fume Fever." Onset of symptoms may be delayed 4 to 12 hours. Symptoms include irritation of the nose, mouth and throat, cough, stomach pain, headache, nausea, vomiting, metallic taste, chills, fever, pains in the muscles and joints, thirst, bronchitis or pneumonia and a bluish tent to the skin. These symptoms go away in 24 to 48 hours and leave no effect.

#### SECTION VII. SPILL OR LEAK PROCEDURES

Care should be taken that molten metal should be handled carefully during pouring. Since the temperature of molten copper alloys is over 2000°F, severe metal burns could occur.

#### SECTION VIII. SPECIAL PROTECTION INFORMATION

Melters and pourers should wear NIOSH approved respiratory protection where PEL or threshold values are or may be exceeded. The selection of the appropriate respiratory protection (dust and fume respirator, supplied air respirator, etc.) should be based upon the actual or potential airborne contaminants and their concentrations present.

#### SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

All melters should wear proper protective gloves and eye protection equipment. Ingots can be preheated to remove any moisture on the surface in order to avoid any splashing when charged into a molten bath.

	Copper	Composition, % max except as indicated													
Classification	Alloy UNS No	Coppera	Tia	Lead	Zince	Iron	Anti- mony	Nickel (incl Co- hali)	(ur	Phos- phurus	Alumi- num	Man- ganese	Silicon	Arsenic	Magne
eaded red bress			2 2-3.0 4.3-6.0	1.5~2.5 4.0~5.7	5.8-7.5 4.3-6.0	0.25 0.25	0.25 0.25	0 B=1.5 0.0°	0.08 0.08		0.005 0.005		0 005 0 005	,.	
	C83800	82.0-83.5	3,5-4.2	5.8~6.8	5.5-8.0	0.25	0.25	0 II ^C	0.08	0.02	0.005		0 005		
caded semi- red brass		78 0-82 0 79 0-82 0		2 0-2.8 6.3-7 7	100-160 7.0-100	0 35 0.35	0 25 0 25	0 %, 0 %	0 08 0:04		0 005 0.005		0 005 0 005		
j	C84800	75.0~76.7	2.3-3 0	5.5-6.7	130-160	0.35	0 25	υ. <b>ક</b> c	0,08	0 02	υ <b>005</b>		0 005		
eaded yel- low brass		70 0-73 0		1.5-3.5	21.0-27.0		0.20	0.5	0.05				0 05		<u> </u> 
		66 0-69 0			25 0-31 0	l		0.8			0 00 s		o os		
	C85700	58 0-63.0	0 50-1 5	08-15	33 0-40.0	0 50		0 8			0 80		0 05		
ligh-strength yellow brasa			t 5 0 10	i 5 0.10	31 0 -41 0 22 0~28.0		U.05	0.50 0.∎	00>	001	0 10 3 V—4 Ý	0 25 2.5=5 0	U 25	u us	
	C86300	60 0-66.0	0.10	O. 1 <b>O</b>	22.0-28.0	2.0-4.0		0.8			10-73	25-50	•		
	C8640U	56 O-62 U	0 50-10	0 50-1 3	34 0-42 0	0 40-2 0		08			0 50-1 5	0.10-1.0			
	C\$6500	55 0-60 0	1.0	0 30	36.0-42 0	0.40-2.0		0 #			U 50- I 5	0.10-1.5			
alicon bronze and		55 0-60 0 94.0 min	15	0 50-1 5 0 20	30 0- 38.0 0.25	1 0- 3.0 0.20		U <b>8</b>			10 30	10 15	35-45		
Pincou	C874/JU	79.0 min ⁹		1.0	12.0-16 0	İ					0 5		2.5 4 0		
G-12	C87500	79 0 min®		0.50	120-160	ļ		'			o.s	'   	30-10		)
in bronze and leaded	C87800 C87900	88 0 min [®] 80 0 min [®] 63 0 min [®] 86 0–89 0	0 25	0.50 0.15 0.25 0.25	4 0-7.0 12.0-16 0 30 0-36.0 3.5-5.0	0 20 0 15 0.40 0.15	0.20 0.05 0.05	0 20 0 50 0 8°	0 05 0 05 0 05		015	0.25 0.15 0.15	35-55 38-42 08-12 0005	0 05 0 05	งงเ
un bronze	C90500	86.0-89.0	9.5~10.5	0.25	1 5~3.0	0.15	0 20	0 <b>8</b> °	0.05	0.07	U 005		0 005		
	C90800 C91000 C91100 C91300 C91600 C91700	88 0-90 0 85 0-89 0" 84 0-86 0 82 0-85 0 79 0-#2.0 86 0-89 0" 84 0-87 0" 86 0-89.0	11.3-13.0 14.3-16.0 15.3-17.0 18.3-20.0 10.0-10.8 11.5-12.5	0.25 0 20 0 25 0 25 0.25 0.25	0.50 ^g 0.25 1.5 0.25 0.25 0.25 0.25 0.25 0.25	0.15 0.65 0.10 0.15 0.15 0.15 0.15	0 10 0 10 0 20 0 20 0 10	0.8 0.50 0.50 1.2-2.0 1.2-2.0	0 05 0 05 0 05 0 05	0.30 0.03 1.0 1.0 0.25	0 005 0 005 0 005		0 005 0 005 0 005 0 005 0 005 0 005 0 005 0 005		
	C92300	85.0-89.0	7 <b>6-9 0</b>	0.30~0.9	3 0-5.0	U.20	0 20	0 8°	0 05	0.03	u 0 <b>05</b>		0 005		
Ì	C92700 C92800	85 0-88 0 86 0-89 0 78 0-82 0 82 0-86 0"	9 3-11 0 15 3-17 0	1.0-2.3 4 0-3.7	0 50 0 R 0 B 0 25	0.20 0.15 0.15 0.15	0.20 0.20				0 005		0 005 0 005 0 005 0 005		
igh-lead tin bronze	C93200	82 0-84 0	6 5-7 5	6.5-7.7	25-40	0 20	0.30	0.8°	0.04	0.03	0 005		0 005		
		#2 0-#5 0 #3.0-#5.0		70-8.7 # 5-97		0.20 0.10	0 JU 0.36		0.08 0.06				0 005 0 005		
	C93700	78.0-810	93-107	8.3-10.7	0.8	0.10	0.50	0 84	0.08	0.05	1001		0 003		

	C	Componition, % max except as indicated													
Clamification	Copper Alloy UNS No.	Copper	Tie	Leed	Ziace	iree	Anti- mony	Nickel (incl Co- balt)	Sul- fur	Phorus phorus	Alumi- num	Man- ganese	Silicoe	Areenic	Magne
High-lend tin bronze Continued	C93800	76.0-79.0	6.5=7.5	14.0-16.0	0.0	0.10	0.50	0.8*	0.06	0.05	0.005		0.003		
	C93900	76.5-79.5	5.3-7.0	14.0-17.7	1.5	0.35	0.50	0.8	0.08	0.05	0.005		0.005		
		69.0-72.0		14.0-15.7		0.25	0.50	0.50-1.0	0.08	1	0.005	1	0.005		
	C94100	72.0-79.0	4.7-6.5	15.0-21.7	3.0	0.10	0.7	0. <b>8</b> °	0.08	0.05	0.005	ļ	0.005	j	1
	C94300	69.0-73.0	4.7=5.8	22.0-24.5	0.8	0.10	0.7	0.8 [¢]	0.08	0.05	0.005		0.005		
	C94400	78.0–82.0	7.3-9.0	9.0-11.7	0.8	0.10	0.7	0.8 ^C	0 08	0.05	0.005		0.005		
		70.0-75.0	6.3-8.0	16.0-21.5		0.10	0.7	0. <b>8</b> °	0.08		0.005	1	0.005		į
Nickel tin		86.0-89.0	4.7-6.0	0.086	1.3-2.5	0.20	0.10	4.5-6.0	0 05	0.05	0.005	ŀ	0.005		ļ
bronze and leaded		85.0-89.0 79.0-81.0	4.7-6.0 4.3-6.0	0.30-0.9 4.0-5.7	1.3-2.5 4.3-6.0	0.20 0.25	0.10	4.5-6.0 4.5-6.0	0.08	1	0.005	ļ	0.005		ļ
nickel tin	C74700	79.0-61.0	4.5-0.0	4.0-3.7	4.3-6.0	0.23	0.23	4.5-0.0	0.06	0.03	0.005		0.003		
bronze Aluminum bronze	C95200	86.0 min'				2.5-4.0					8.5-9.5				
	CY5300	86.0 mia ^r				0.8-1.5				[   	9.0-11.0				
	C95400	83.0 min*				3.0-5.0		1.5 max			10.0-11.5	0.5			
	C95410	83.0 mia				3.0-5.0		1.5-2.5			10.0-11.5	0.5			
	C95500	78.0 mia*				3.0-5.0		3.0-5.5			10.0-11.5	3.5			
		88.0 mia/					,	0.25			6.0-8.0		1.8-3.3		
l l	1	71.0 min	•	0.03	J	2.0-4.0	}	1.5-3.0	۱ ۱	, I	7.0-8.5	11.0-14.0 إ	7	ι.	)
	C95800	78.0 mis ²		0.02		3.5-4.54		4.0-5.0 ⁴			8.5-9.5	0.8-1.5	0.05		
Cupro-nickel		84.5-87.0 65.0-67.0		0.005	1.0Cb 0.7-1.5Cb	1.0-1.8 0.25-1.0		9.0–11.0 29.5–31.5	0.02 0.02		0.005 0.005	0.8-1.5 0.8-1.5	0.25 0.30 <b>-0</b> .50		
	C96800	remainder	7.5-8.5		0.1-0.3 Cb			9.5-10.5				0.05-0 30			0.005-
ended nickel		53.0-58.0	1.5-3.0	8.0-11.0	17.0-25.0	1.0	0.35	11.0-14.0	0.08	0.05	0.005	0.5	0.05		0.15
proess		63.0-66.0		3.5-5.0	3.0-9.0	1.0	0.25	19.5-21.0	1		0.005	1.0	0.05		
	C97800	64.0-67.0	4.5-5.5	1.0-2.0 · j	1.0-4.0	1.0	0.20	24.0-26.0	0.08	0.05	0.005	1.0	0.05	]	

Date MSDS Prepared

U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

Form Approved OMB No. 44-R1387

Date: See By: T. DERAM

By: T. DERAM
Rev.: NOV, 1985

## MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shippreaking (29 CFR 1915, 1916, 1917)

SEC	CTION I
BUEHLER® LTD.	EMERGENCY TELEPHONE NO. (312) 295-6500
ADDRESS Number, Street, City, State, and ZIP Code; 41 Waukegan Road, Lake Bluff,	Illinois 60044
CHEMICAL NAME AND SYNONYMS	#30-5108/5178 CARBINET®
CHEMICAL FAMILY	SiC Waterproof Paper

PAINTS, PRESERVATIVES, & SOLVENTS	X TLV	ALLOYS AND METALLIC COATINGS	*	TLV (Units)
PIGMENTS	N/A	BASE METAL		N/A
CATALYST	N/A	ALLOYS	1	N/A
VEHICLE	N/A	METALLIC COATINGS		N/A
SOLVENTS	N/A	FILLER METAL PLUS COATING OR CORE FLUX		N/A
ADDITICES	I I N/A	OTHERS		N/A
OTHERS	N/A			i
HAZARDOUS MIXTURE	S OF OTHER LI	QUIDS, SOLIDS, OR GASES	<b>%</b>	TLV (Units)
This mixture contains no in	gredients	known to retain hazardous		
properties or which is defi	ned as haz	ardous by OSHA.	$\top$	
		and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s		

SECTION III - PHYSICAL DATA								
BOILING POINT (*F.)	· N/A	SPECIFIC GRAVITY (H20=1)	N/A					
VAPOR PRESSURE (MM Hq.)	N/A	PERCENT, VOLATILE	N/A					
VAPOR DENSITY (AIR+1)	N/A	EVAPORATION RATE	N/A					
SOLUBILITY IN WATER	• • •	13						
APPEARANCE AND ODGR								

FLASH POINT (Method used)	N/A	.,		i	FLAMMABLE LIMITS	Let	Uel
EXTINGUISHING MEDIA	Water,	CO2,	Foam,	Dry	Chemical		
SPECIAL FIRE FIGHTING PROC						 	

	was a sile
	SECTION V - HEALTH HAZARD DATA
THRESHOUD LIMIT VAL	Nuisance dust, respirable - 5mg/m³, total - 15mg/m³
EFFECTS OF OVEREXPO	Cheking sensation if allowed to become very dusty.
	May produce irritation of skin by abrasion.
EMERGENCY AND FIRST	
•	SECTION VI - REACTIVITY DATA
STABILITY LIN	STABLE CONDITIONS TO AVOID
INCOMPATABLE TY MAIN	ABLE   V
	y strategie in de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company d
HAZARDOUS CECOMPO	والمناف والمحاصر والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم والمستخدم
HAZARDOUS	MAY OCCUR CONDITIONS TO AVOID
POLYMERIZATION	WILL NOT OCCUR X
	No special procedures
WASTE DISPOSAL METH	100
	No special procedures
	SECTION VIII - SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTEC	
VENTILATION   LC	CAL EXHAUST
MI MI	Normal dust procedure  ECHANICAL (General)
PROTECTIVE GLOVES	! EYE PROTECTION
	Recommended when grinding! Face shield or safety goggles when
OTHER PROTECTIVE E	grinding.
	CECTION IN CORP.
PRECAUTIONS TO BE	SECTION IX - SPECIAL PRECAUTIONS
	TARLET IN PARTICULAR AND STORING
	Normal precautions should be taken for nuisance dusts and
OTHER PRECAUTIONS	particulates generated during grinding operation principally
	from work piece.

PAGE (2) The data and information as stated was furnished by the manufacturer and supplier of this product. BUEHLER, LTD, cannot warrant the accuracy of this information, and shall not be responsible or liable for any damage that may result, should any of the information be erroneous.

Form OSHA-20



## **Burmah-Castrol Inc.**

RARITAN PLAZA II, RARITAN CENTER, EDISON, N.J. 08837

Telex: 219894 (CASED UR)

Telephone: (201) 225-6392

Telecopier: (201) 225-1069

December 11, 1986

T R W Control & Fasteners Group 265 3rd Street Cambridge, MA 02142

Attn: Mr. Vincent Juliana

RECEIVED

DEC 1 5 1986

D. F. BORSUK

Dear Mr. Vincent:

At the request of our sales engineer, Mr. John McCormack, we are happy to provide you with technical data and material safety data sheets on CASTROL TLC-925.

Also, please be advised that we have arranged to ship you, under separate cover, a five-gallon sample of CASTROL TIC-925 for trial purposes at no charge.

Thank you for your interest in CASTROL products. We trust the enclosed information is of assistance, however, should you require any further information or help, please do not hesitate to contact either Mr. McCormack or myself.

Cordially, BURMAH-CASTROL INC.

Robert P. Phelan/cb.

Robert P. Phelan Manager/Metalworking Products Div.

RPP/gg Encls.

cc: Mr. John McCormack

TRW-00381



## CASTROL MATERIAL SAFETY DATA SHEET SECTION 1-IDENTITY BURMAH-CASTROL INC. Emergency | RARITAN PLAZA II, RARITAN CENTER | Telephone No. 201-225-6392 | EDISON, NEW JERSEY -08837-| Name of Person Responsible for Preparation: MICHAEL P. SHEEHAN Date:11/11/85 | Trade Name: CASTROL TLC-925 Chemical Name: NA | Chemical Family: NEAT METALWORKING DIL SECTION 2-HAZARDOUS INGREDIENTS | Principal Hazardous Component(s) Chemical & Common Names TLV(Units) CAS# NONE SECTION 3-PHYSICAL & CHEMICAL CHARACTERISTICS | Boiling Point(F) NA Specific Gravity(H20=1) 0.90 Vapor Pressure(mm Hg) NA Percent Volatile by Volume(%) NA @25 DEG C Vapor Density(AIR≔1) NA Evaporation Rate NA N-BUTYL ACETATE = 1 Solubility in Water INSOLUBLE | Appearance and Odor SECTION 4-FIRE and EXPLOSION DATA Flash Point (Method Used) | Flammable Limits | Lower 1 Upper COC 320 DEG F i in Air XVol. NA NA FOAM, CARBON DIOXIDE AND DRY CHEMICAL. I Extinguishing Media | Special Fire Fighting Procedures | USE SELF CONTAINED BREATHING | AFFARATUS IN ENCLOSED FIRE AREAS. | Unusual Fire and Explosion Hazards NA

#### SECTION 5-PHYSICAL HAZARDS

Stability (Stable/Unstable) | Conditions NA STABLE I to avoid

Incompatibility (Materials to Avoid) AVIOD STRONG OXIDANTS.

Hazardous CARBON MONOXIDE, SMOKE, HCL AND OXIDES OF Decomposition Products SULFUR.

Hazardous Polymerization (Will/Will Not Occur) WILL NOT OCCUR

Conditions to Avoid NA

#### SECTION 6-HEALTH HAZARDS

Threshold Limit Value NA

Signs and Symptoms of Exposure

Acute Overexposure: PROLONGED SKIN EXPOSURE MAY CAUSE MILD SKIN IRRITATION.

Chronic Overexposure: SAME AS ABOVE.

Emergency First Aid Procedures

- 1. Inhalation: REMOVE FROM AREA OF VAPORS TO FRESH AIR ENVIRON-MENT.
- 2.Eyes: FLUSH EYES WITH CLEAR WATER UNTIL IRRITATION SUBSIDES, CONTACT A PHYSICIAN.
- 3.5kin: REMOVE ANY CONTAMINATED CLOTHING. WASH SKIN WITH SOAP AND WATER.
- 4.Ingestion: DO NOT INDUCE VOMITING, CONTACT A PHYSICIAN.

#### SECTION 7-SPECIAL PROTECTION INFORMATION

Respiratory Protection USE HYDROCARBON VAPOR CANISTER OR AIR (specify type) SUPPLIED RESPIRATORY PROTECTION IN CONFINED AREAS. I Special USE ONLY WITH ADE-Ventilation! Local Exhaust

FACE VELOCITY > 60 FPM | QUATE VENTILATION.

I Other NO SMOKING OR OPEN | Mechanical(General)

| USE EXPLOSION PROOF I FLAMES.

EQUIPMENT.

Protective USE CHEMICALLY RESIST- Eye USE SPLASH GOGGLES. Gloves ANT GLOVES, IF NEEDED TO Protection

AVIOD PROLONGED SKIN CONTACT.

Other Protective USE CHEMICAL RESISTANT APRON OR OTHER CLOTHING IF I Clothing or Equipment NEEDED TO AVIOD REPEATED OR PROLONGED SKIN CONTACT.

#### CASTROL MATERIAL SAFETY DATA SHEET

page 3

SECTION 8-SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES
KEEP CONTAINERS CLOSED WHEN NOT IN USE, DO
Precautions to be Taken NOT HANDLE OR STORE NEAR HEAT, SPARKS,
in Handling and Storage FLAME OR STRONG OXIDANTS, ADEQUATE
VENTILATION REQUIRED.

Other Precautions AVIOD BREATHING VAPORS. AVIOD PROLONGED OR REPEATED CONTACT WITH SKIN.

Steps to be Taken in Case RECOVER FREE LIQUID. ADD ABSOBANT (SAND,)
Material is Released or Spilled EARTH, SAWDUST, ETC.) TO SPILL AREA!
AVIOD BREATHING VAPORS. VENTILATE CONFINED SPACES. KEEP PETROLEUM
PRODUCTS OUT OF SEWERS AND WATERCOURSES BY DIKING OR IMPOUNDING.
ADVISE AUTHORITIES IF PRODUCT HAS ENTERED OR MAY ENTER SEWERS,
WATERCOURSES, OR EXTENSIVE LAND AREAS.

Waste disposal method ASSURE CONFORMITY WITH APPLICABLE REGULATIONS!

#### DISCLAIMER

The information contained herein is beleived to be accurate and is offered in good faith. Because product use is beyond our control, no warranty is given, expressed or implied. Burmah-Castrol Inc. cannot assume any liability for the use of information contained herein.

"This product contains a chlorinated paraffin."

CHLORINATED PARAFFINS ARE A CLASS OF COMPOUNDS THAT ARE SIMILARLY | MANUFACTURED BUT VARY IN MOLECULAR STRUCTURE BY CARBON CHAIN LENGTH | AND THE DEGREE OF CHLORINATION. THIS PARTICULAR PRODUCT HAS NOT BEEN SHOWN TO HAVE ADVERSE HEALTH EFFECTS. HOWEVER THE CHLORINATED PARA- | FFINS C12/60 PERCENT CHLORINE AND C24/40 PERCENT CHLORINE IN RECENT | NATIONAL TOXICOLOGY PROGRAM BIDASSAYS CAUSE TUMORS IN LABORATORY | ANIMALS TO WHICH THOSE CHEMICALS WERE FED AT HIGH DOSES IN COMBINATION WITH CORN OIL. IN ANOTHER STUDY C14 TO 17 52 PERCENT CHLORINATED PARAFFIN WHEN FED TO PREGNANT RATS RESULTED IN DEATH OF OFF- | SPRING SOON AFTER BIRTH. THE RELEVANCE OF THESE STUDIES IF ANY, | HAS NOT BEEN DETERMINED.



# Industrial Business Group

# METALWORKING PRODUCTS DIVISION

# Castrol TLC-925

### **H.D. Cutting Oil**

TLC-925 is one of the most highly compounded cutting oils in the Castrol line. It contains special additives providing active sulfur, chlorine and fat thereby enabling TLC-925 to handle the toughest metals, particularly those involving threading and tapping operations.

Castrol TLC-925 may be used as received or as a concentrate for blending cutting oils used in less severe operations.

#### **Advantages**

- Contains anti-mist additive to enhance work place safety.
- Exhibits marked improvements with respect to tool life and finish.
- · Helps eliminate inventory problems.
- Handles toughest materials and operations.

#### Typical Test Data

Specific Gravity @ 60°F	0.900	
SSU @ 100°F	160	
Pour Point	5°F	
Lbs. per gallon	7.5	
Appearance	Dark brown fluid	
Flash Point	>300°F	
Copper Corrosion	Positive	

These are typical figures and do not constitute a specification.

Hote

Health and Safety information sheets are available for all Castrol lubricants and these are obtainable from the address below.

All reasonable care has been taken to ensure that the information contained in this publication is accurate as of the date of printing. However, such information may nevertheless be affected by changes occurring subsequent to the date of printing in the blend formulation or methods of application of any of the products referred to or in the requirements of any specification approval relating to any such products.



TRW-00386

Industrial Business Group, **Burmah-Castrol Inc.**2698 White Road, Irvine, CA 92714 (714) 850-1151
Raritan Plaza II, Raritan Center, Edison, N.J. 08817 (201) 225-6392

REPORT NUMBER: 703 MSDS NO: P126640

VAN WATERS & RODERS INC. MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 05/08/92

VERSION: 001

FASE: 001

PRODUCT: CAUSTIC SODA BEADS - PELS AND PELS PLUS

ORDER NO: 112239 PROD NO : 239880

TRU FASTEMERS DIVISION 193 BINNEY STREET

CAMBRICGE , MA 02142

VAN WATERS & POGERS INC. , SUBSIDIARY OF UNIVAR (206)889-3400 6100 CARILLON POINT , KIRKLAND

. WA 98033

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMIREC (80**0)424-9306** 

CONTACT YOUR LOCAL VAN WATERS & ROBERS BRANCH OFFICE AT VHAR BOSTON 508-745-009- SALEN , MA

SECTION I PRODUCT IDENTIFICATION

PRODUCT NAME: CAUS TO SOURCE HUS - PERCENTED POSSERUS

MSDS #: P12664V

DATE 198UED: 04/03/91

TRADE NAME: PELS Caustic Soda Beads, PELS-Plus

CHEMICAL NAME/SYNONYMS: Anhydrous Sodium Hydroxide, Sodium Hydroxide, Caustic

Soda

CHEMICAL FAMILY: Alkali

CAS NUMBER: 001310-73-2 FORMULA: NaOH

U.S. DOT SHIPPING NAME: Sodium Hydroxide, Solid

U.S. OOT HAZARD CLASS: Corrosive Material

SUBSIDIARY RISK: N/A

I.O. NUMBER: UN1823

REPORTABLE QUANTITY: 1000 lbs/454 kg

IMO DESCRIPTION: Sodium Hydroxide, solid, Class 8, UN1823,

IMDG CODE PAGE: 8225.

0908-1753

REFORT NUMBER: 703 MSDS NO: P12664V VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 05/08/92

PAGE: 002

VERSION: OOL

PRODUCT: CAUSTIC SOSA BEADS - PELS AND PELS PLUS

ORBER NO: 112239 PROD NO: 239880

PHYSICAL DATA

BOILING POINT @ 760 mmHg: 1390 C

VAPOR DENSITY (AIR = 1): N/A

SPECIFIC GRAVITY (H20 = 1): 2.130

pH OF SOLUTIONS: Strongly Basic

FREEZING/MELTING POINT: 310-320 C (590-608 F)

SOLUBILITY (WEIGHT % IN WATER): 347 G/100 G water @ 100 C

BULK DENSITY: 73 #/CU. FT. (compacted)

VOLUME % VOLATILE: N/A

VAFOR PRESSURE: N/A

EVAPORATION RATE: N/A

HEAT OF SOLUTION: Exothermic

APPEARANCE AND ODOR: White to slightly colored solid, no odor

SECTION 2, INGREDIENTS

MATERIAL

PERCENT

Sodium Hydroxide

95-99

*****************************

SECTION 3. FIRE/EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED): None

FLAMMAGLE LIMITS IN AIR (% BY VOLUME): LEL: N/A UEL: N/A

EXTINGUISHING MEDIA: Not Applicable

UNUSUAL FIRE AND EXPLOSION HAZAROS: Contact with some metals particularly magnesium, aluminum and zinc (galvanized) can rapidly generate hydrogen, which

is explosive.

SECTION 4. HEALTH HAZARD DATA

TOXICITY DATA:

LC50 INHALATION: See Section 5 LD50 DERMAL: See Section 5

SKIN/EYE IRRITATION: See Section 5

LD50 INGESTION: See Section 5

FISH, LC50 (Lethal Concentration): Unknown

TRW-00388

REPORT NUMBER: 703 - MSOS NO: P12664V

VAN WATERS & ROGERS INC. Material safety data sheet

EFFECTIVE DATE: 05/08/92

VERSION: 001

FAGE: 003

PROGUCT: CAUSTIC SODA SEADS - PELS AND PELS PLUS

ORDER NO: 112237 PROD NO: 239880

CLASSIFICATION: (POISON, IRRITANT, ETC.)

INHALATION: Irritant SKIN: See Section 5 SKIN/EYE: Corrosive INGESTION: Corrosive AQUATIC: Unknown

This section covers effects of overexposure for inhalation, eye/skin contact, ingestion and other types of overexposure information in the order of the most hazardous and the most likely route of overexposure.

IS CHEMICAL LISTED AS A CARCINOGEN OR POTENTIAL CARCINOGEN: NTP: No; IARC: No; OSHA: No

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None known

PERMISSIBLE EXPOSURE LIMITS: OSHA: 2 mg/cu.m.; CEILING, 29 CFR 1910.1000 (Rev. 3/1/89).

#### ACUTE:

EYE CONTACT: Causes severe burns; small quantities can result in permanent damage and/or loss of vision.

SKIN CONTACT: Corrosive action causes burns and frequently deep ulceration with subsequent scarring. Prolonged contact destroys tissue. Dust or mist from solutions can cause irritant dermatitis.

INGESTION: Ingestion either in solid or liquid form can cause very serious damage to the mucous membranes or other tissues with which contact is made, and may be fatal.

INHALATION: Inhalation of dusts or mists can cause damage to the upper respiratory tract and to the lung tissue depending on severity of exposure. Effects can range from mild irritation of mucous membranes, severe pneumonitis and destruction of lung tissues.

CHRONIC: The effects of long-term, low-level exposures to this product have not been determined. Safe handling of this material on a long-term basis should emphasize the avoidance of all effects from repetitive acute exposures.

EMERGENCY AND FIRST AID PROCEDURES

TRW-00389

REPORT NUMBER: 703 MSDS NO: P12664V

VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SMEET

VERSION: 001

PAGE: 004

EFFECTIVE DATE: 05/08/92

PRODUCT: CHUSTIC SODA BEADS - PELS AND PELS PLUS

ORBER NO: 112239 PROD NO: 239890

INHALATION: Remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Contact a physician.

EYE OR SKIN CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during this flushing with water. Call a physician.

Immediately flush skin with plenty of water while removing contaminated clothing and boots. Call a physician. If skin feels slippery, caustic may still be present in sufficient quantities to cause rash burn. Continue washing until slick skin feeling is gone. Thoroughly clean contaminated clothing and boots before reuse or discard.

INGESTION: If conscious, drink large quantities of water or acidic beverages tomato or orange juice, carbonated soft drinks). Do not induce vemiting. Take immediately to a hospital or physician. If vemiting occurs, administer additional water. If unconscious, or in convulsions, take immediately to a hospital. Do not attempt to induce vemiting or give anything by mouth to an unconscious person.

NOTES TO PHYSICIAN (INCLUDING ANTIDOTES): Treat symptomatically,

STABILITY: Stable

CONDITIONS TO AVOID: Contact with material listed below

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: None

INCOMPATIBILITY (MATERIAL TO AVOID): Organic materials and concentrated acids may cause violent reactions; caustic soda reacts with magnesium, aluminum, zinc (galvanized), tin, chromium, brass and bronze generating hydrogen which is explosive.

HAZARDOUS DECOMPOSITION PRODUCTS: Reaction with various food sugars may form carbon monoxide.

STEPS TO BE TAKEN IF MATERIAL IS SPILLED OR RELEASED: Only trained personnel equipped with NIOSH/MSHA approved, full facepiece combination dust/mist and acid gas respirators should be permitted in area. For dry material, use

REPORT NUMBER: 703 MSDS NO: P12664V

VAN WATERS & ROSERS INC. MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 05/08/92

VERSION: 001

FAGE: 005

PRODUCT: CAUSTIC SODA BEADS - PELS AND PELS PLUS

ORDER NO: 112239 PROB NO : 239880

appropriate methods, shovels, brooms, and vacuums to clean up the spill. If mixed with water, or likely to become mixed with water or any liquid, dike area to contain spill. Reclaim if possible. Or, dilute spill with large amounts of water then neutralize with dilute acid. Use vacuum truck to pick up neutralized material for proper disposal. Properly neutralized liquid residues (pH 6 to 9) may be disposed of in waste water treatment facilities which allow the discharge of neutral salt solutions. After all visible traces have been removed, flush area with large amounts of water.

WASTE DISPOSAL METHOD: PPG recommends disposal of dry residues in an approved hazardous waste management facility. Care must be taken when using or disposing of chemical materials and/or their containers to prevent environmental contamination. It is your duty to dispose of the chemical materials and/or their containers in accordance with the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, as well as any other relevant Federal, state, or local laws/regulations regarding disposal.

***************** SECTION 8. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use NIOSH/MSHA approved dust/mist filter respirator

for routine work purpose when exposure to mists exceed the permissible exposure limits. The respirator use limitation made by NIOSH/MSHA or the manufacturer must be observed. Respiratory protection programs must be in accordance with 29 CFR 1910 134.

VENTILATION (TYPE): Local exhaust sufficient to maintain dust levels below permissible exposure limit.

EYE PROTECTION: Close fitting chemical safety goggles with face shield.

GLOVES: Nitrile, neoprene, natural rubber.

OTHER PROTECTIVE EQUIPMENT: Rubber boots with safety toes, rubber aprons, PVC clothing, plastic hard hat should be used when necessary to prevent skincontact. Personal protective clothing and use of equipment must be in accordance with 29 CFR 1910.133 and 29 CFR 1910.132.

****************** SECTION 9. SPECIAL PRECAUTIONS 

PRECAUTIONS TO BE TAKEN DURING HANDLING AND STORING: Wear NIOSH/MSHA approved, dust type respirator, where dusts or mists may be generated. Store in a dry

place indoors. Never touch eyes or face with hands or gloves that may be contaminated with PELS caustic soda beads. Never enter a PELS caustic soda storage tank or container (truck or rail car) even if it appears empty. Avoid REPORT NUMSER: 703 MSDS RO: P126649

VAN WATERS & POGERS INC. Material safety data sheet

EFFECTIVE DATE: 05/08/92

FAGE: 008 VERSION: 001

V 4m 15 + 2 2, 521 C 1

PRODUCT: CAUSTIC SOBA BEARS - PELS AND PELS PLUS

OFDER NO: 112239 PROO NO : 239880

contact with organic materials and concentrated acids - May cause violent reactions; caustic soda reacts with magnesium, aluminum, zinc (galvanized), tin, chromium, brass and bronze, generating hydrogen which as explosive. Also, caustic soda may react with various sugars to generate carbon monoxide. Then making solutions, add FELS caustic soda slowly to surface of cold water while stirring, to avoid violent eruption or explosive reaction. Do not add to warm or hot water. Hazardous carbon monoxide gas can form upon contact with food and beverage products in enclosed vessels and can cause death. Follow appropriate tank entry procedures (See ANSI Z177.1 - 1977). Keep containers closed when not in use.

OTHER PRECAUTIONS: Do not get in eyes, on skin, or on clothing. Can cause severe injury or blindness. Do not breathe mist. Do not swallow. Wash thoroughly after handling. Do not eat, drink, or smoke in work areas.

COMMENTS: TSCA - Sodium hydroxide is on the TSCA Inventory under CAS No. 1310-73-2.

SARA TITLE III - A) 311/312 CATEGORIES - Acute and reactivity, B) Not listed in Section 313, C) Not listed as an "Extremely hazardous substance" in Section 302.

CERCLA - Listed in Table 302.4 of 40 CFR Part 302 as a hazardous substance with a reportable quantity of 1000 pounds. Releases to air, land, or water which exceed the RQ must be reported to the National Response Center, 800-424-8802.

CANADIAN WHMIS - A) Sensitization to product: None known; B) Reproductive toxicity: None known; C) Odor threshold: No odor; D) Product use: Source of alkalinity; E) Requires corrosive symbol (Class E).

REPORT NUMBER: 703 MSDS NO: P12664V

VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET

PAGE: 007

EFFECTIVE DATE: 05/08/92

VERSION: 001

PRODUCT: CAUSTIC SODA BEADS - PELS AND PELS PLUS

ORDER NO: 112239 PROD NO : 239880

----- FOR ADDITIONAL INFORMATION ------

CONTACT: MSDS COORDINATOR

VW&R BOSTON

EURING BUSINESS HOURS, PACIFIC TIME (204)899-3400

07/14/92 05:15 PRODUCT: 239880 CUST NO: 176298 ORDER MO: 112239

NOTICE

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* * * END OF MSDS * * *

# OCCIDENTAL CHEMICAL MATERIAL SAFETY DATA SHEET

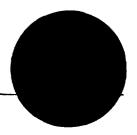
MSDS NUMBER: M4820

MSDS DATE:

05-10-88

PRODUCT NAME: CAUSTIC SODA-BEADS

24 HOUR EMERGENCY PHONE: (716) 278-7021



#### I. PRODUCT IDENTIFICATION

3 HEALTH HAZARD, 0 FIRE HAZARD, & 2 REACTIVITY
Based on the National Paint & Coatings Association HMIS rating system.

MANUFACTURER'S: Occidental Chemical Corporation

NAME AND **ADDRESS** 

Customer Service, Occidental Tower P O Box 809050, Dallas, Texas 75380 (1-800-752-5151)

Te lephone

CHEMICAL NAME: Sodium hydroxide

CAS NUMBER: 1310-73-2

SYNONYMS/COMMON NAMES: Sodium Hydroxide-Dry

CHEMICAL FORMULA: NaOH

DOT PROPER SHIPPING NAME: Sodium Hydroxide, dry

DOT HAZARD CLASS: Corrosive material

DOT I.D. NUMBER: UN1823

HAZARDOUS SUBSTANCE:

RQ 1000

#### II. HEALTH HAZARD INFORMATION

#### EMERGENCY AND FIRST AID PROCEDURES

EYES:

OBJECT IS TO FLUSH MATERIAL OUT IMMEDIATELY THEN SEEK MEDICAL ATTENTION. IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within several seconds is essential to achieve maximum effectiveness. SEEK MEDICAL essential to achie ATTENTION IMMEDIATELY.

SKIN.

Immediately wash contaminated areas with plenty of water for at least 15 minutes. Remove contaminated clothing and footwear and wash clothing before reuse. Discard footwear which cannot be decontaminated. SEEK MEDICAL ATTENTION IMMEDIATELY.

INHALATION:

Remove to fresh air; if breathing is difficult, have trained person administer oxygen. If respiration s mouth-to-mouth resuscitation. GET MEDICAL ATTENTION. aive stops.

INGESTION:

NEVER give anything by mouth to an unconscious person. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. If available, give several glasses of milk. If vomiting occurs spontaneously, keep airway clear. SEEK MEDICAL ATTENTION IMMEDIATELY.

0908-1760

TRW-00394

CAS = Chemical Abstract Service Number

CORP = Corporate Exposure Limit PEL = OSHA Permissible Exposure Limit TLV = ACGIH Threshold Limit Value. Current ND = No relevant information found or not available NA = Not applicable - See Chronic Effects Information IMPORTANT The information presented herein, while not guaranteed, was prepared by competent technical personnel and is true and accurate to the best of our knowledge. NO WARRANTY, OR GUARANTY, EXPRESS OR IMPLIED IS MADE REGARDING PERFORMANCE, STABILITY OR OTHERWISE. This information is not performance considerations. While our technical personnel will be happy to respond to questions regarding safe handling and use procedures. Safe handling and use remains the responsibility of the customer. No suggestions for use are intended as, and nothing herein shall be construed as, a recommendation to infringe any existing patents or violate any Federal, State or local laws.

#### II. HEALTH HAZARD INFORMATION (Continued)

#### ROUTES OF EXPOSURE

#### INHALATION:

Airborne concentrations of dust, mist, or spray of this product may cause damage to the upper respiratory tract and the lung tissue which could produce chemical pneumonia depending upon severity of exposure.

This product is destructive to tissues contacted and produces severe burns. A latent period may exist between exposure and sense of irritation.

#### EYE CONTACT:

This product is destructive to eye tissues on contact. Will cause severe burns that result in damage to the eyes and even blindness.

#### INGESTION:

This product, if swallowed, can cause severe burns and complete tissue perforation of mucous membranes of the mouth, throat, esophagus, and stomach.

#### EFFECTS OF OVEREXPOSURE

#### ACUTE:

Corrosive to all body tissues with which it comes in contact.

#### CHRONIC:

The effect of chronic local dermal exposure consist of multiple areas of superficial destruction of the skin or of primary irritant dermatitis. Similarly, chronic inhalation of dust, spray, or mist may result in varying degrees or irritation or damage to the respiratory tract tissues and an increased susceptibility to respiratory illness. These effects only occur when the TLV is exceeded.

#### **HEALTH HAZARD DATA:**

Acute Oral: LD50 140-340 mg/kg (rat) Acute Dermal: LD50 1350 mg/kg (rabbit)

man Dermal Exposure

Regardless of concentration, the severity of damage and extent of its irreversibility increases with length of contact time. Prolonged contact with even dilute sodium hydroxide solution can cause a high degree of tissue destruction. The latent period, following skin contact during which no sensation of irritation occurs, varies from several hours for 0.4 - 4% solutions to 3 minutes with 25-50% solutions.

#### III. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT Sodium Hydroxide

HAZARD DATA PEL= 2 mg/m3 8 hr. TWA TLV= 2 mg/m3 Ceiling

CAS NUMBER 1310-73-2 100

#### See Section II

This material is listed in the TSCA Inventory. Not listed as carcinogen - IARC, NTP, OSHA

OCCIDENTAL CHEMICAL M4820

CAUSTIC SODA-BEADS PRODUCT NAME:

#### IV. FIRE AND EXPLOSION DATA

FLASH POINT: NA

AUTOIGNITION TEMPERATURE: Nonflammable

FLAMMABLE LIMITS IN AIR, % BY VOLUME- UPPER:

LOWER:

EXTINGUISHING MEDIA:

This product is not combustible. Water spray, foam, carbon dioxide, or dry chemical may be used in areas where the product is stored.

SPECIAL FIRE FIGHTING PROCEDURES:

Wear full protective clothing. Avoid direct contact of this product with water as this can cause violent exothermic reaction.

UNUSUAL FIRE AND EXPLOSION HAZARD:

See Reactivity (Section VII).

#### V. SPECIAL PROTECTION

VENTILATION REQUIREMENTS:

Special ventilation is not required under normal use. Use local exhaust ventilation where dust, mist, or spray may be generated.

NOTE: Where carbon monoxide or other reaction products may be generated, special ventilation may be required.

#### SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY:

Respiration protection is not required under normal use. Use NIOSH/MSHA approved respirator where dust, mist, or spray may be generated.

Wear chemical safety goggles plus full face shield to protect against splashing.

GLOVES:

gloves and may Chemical Resistant shou1d be worn be decontaminated by washing with mild soap and water. butyl rubber have been suggested. Natural and

OTHER CLOTHING AND EQUIPMENT:

Impervious protective clothing and chemically resistant safety shoes should be worn to minimize contact. Wash contaminated clothing with soap and water and dry before reuse. Showers and clothing with eyewash facilities should be in close proximity.

#### MONITORING EXPOSURE

BIOLOGICAL:

N/A

PERSONAL/AREA:

NIOSH Analytical Method No. 7401.

Page 4 of 8 05-10-88

#### VI. PHYSICAL DATA

1388°C BOILING POINT @ 760 mm Hg:

FREEZING POINT: 318°C

VAPOR PRESSURE: 42 mm Hg @ 1000°C

SPECIFIC GRAVITY (H20=1): 2.13 @ 20°C

SOLUBILITY IN H20 % BY WT: Completely Soluble

VAPOR DENSITY (Air=1): NA

APPEARANCE AND ODOR: Clear white solid with no distinct odor.

pH: 0.01 moles/liter has pH. 12.0

#### VII. REACTIVITY DATA

#### CONDITIONS CONTRIBUTING TO INSTABILITY:

Under normal conditions of use, this material is stable.

#### INCOMPATIBILITY:

See Section VIII. Avoid contact with water. This product may be added slowly to water or acids with dilution and constant stirring to avoid a violent exothermic reaction. When handling this product, avoid contact with aluminum, tin, zinc, and allower contacts. containing these metals. Do not mix with strong acids without dilution and agitation to prevent violent or explosive reaction. Avoid contact with leather, wool, acids, organic halogen compounds, and organic nitro compounds.

#### HAZARDOUS DECOMPOSITION PRODUCTS:

None known.

#### CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION:

Not known to polymerize.

#### VIII. HANDLING AND STORAGE

#### HANDLING AND STORAGE PRECAUTIONS:

Do not get into eyes, on skin, on clothing. Avoid breathing dust, mists, or spray.

Do not take internally.

Use with adequate ventilation and employ respiratory protection when exposure to dust, mist or spray is possible.
When handling, wear chemical splash goggles, face shield, rubber

gloves and protective clothing.

Wash thoroughly after handling or contact - expos burns which are not immediately painful or visible. contact - exposure can cause

Keep container closed.

Product can react violently with water, acids, and other substances - read Special Mixing and Handling Instructions below carefully before using.

Product is corrosive to tin, aluminum, zinc and alloys containing these metals, and will react violently with these metals in powder form.

Hazardous carbon monoxide gas can form upon contact with food and beverage products in enclosed spaces and can cause death. Follow appropriate tank entry procedures (ANSI Z117.1-1977).

#### SPECIAL MIXING AND HANDLING INSTRUCTIONS:

Product can react violently with water. Considerable heat is generated when product is mixed with water. Therefore, when making solutions always carefully follow these steps:

ALWAYS wear ALL protective clothing described above. NEVER add water to product. ALWAYS add product - with constant stirring - slowly to surface of lukewarm (80-100°F) water, to assure product is being completely dissolved as it is added.

If product is added too rapidly, or without stirring, and becomes concentrated at bottom of mixing vessel, excessive heat may be generated, resulting in DANGEROUS boiling and spattering, and a possible IMMEDIATE AND VIOLENT ERUPTION of highly caustic solution.

NOTE: 50 pounds of product dissolved in 30 gallons of 90°F ater will raise temperature of resulting solution to water will raise temperature of resulting solution to approximately 180°F. Never add more product than can be absorbed by solution while maintaining temperature below 200°F (@ sea level) to prevent boiling and spattering.

Product can react EXPLOSIVELY with acids, aldehydes, and many other organic chemicals - when mixing product with solutions containing such chemicals, follow all of above mixing instructions, and add product very gradually, while stirring constantly.

ALWAYS empty and clean containers of all residues before adding product, to avoid possible EXPLOSIVE reaction between product and unknown residue.

Returnable containers should be shipped in accordance with supplier's recommendations. Return shipments should comply with all federal, state, and DOT regulations. All residual caustic soda should be removed from containers prior to disposal.

#### IX. ENVIRONMENTAL PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Leaks should be stopped. Spills should be contained and cleaned up immediately. Liquid spills should be removed by using a vacuum truck. Solid spills should be scooped up and placed in approved containers for disposal. Neutralize remaining traces of material with any dilute inorganic acid such as hydrochloric, sulfuric, nitric, phosphoric or acetic acid. The spill area should then be flushed with water followed by liberal covering of sodium bicarbonate. All clean-up material should be removed and placed in approved containers, labeled and stored in a safe place to await proper treatment or disposal. Spills on areas other than pavement, e.g., dirt or sand, may be handled by removing the affected soils and placing in approved containers. Persons performing clean-up work should wear adequate personal protective equipment and clothing. Spills or releases should be reported, if required, to the appropriate local, state and federal regulatory agencies.

CAUTION: Caustic Soda may react violently with acids and water.

#### WASTE DISPOSAL METHOD:

The materials resulting from clean-up operations may be hazardous waste and, therefore, subject to specific regulations. Package, store, transport, and dispose of all clean-up materials and any contaminated equipment in accordance with all applicable federal, state, and local health environmental regulation. Shipments of waste materials are subject to manifesting requirements per applicable regulations. Appropriate disposal will depend on the nature of each waste material and should be performed by competent and properly permitted contractors. Ensure that all responsible federal, state, and local agencies receive proper notification of spill and disposal methods.

#### X. ADDITIONAL INFORMATION

OSHA Standard 29CFR 1910.1200 requires that information be provided employees regarding the hazards of chemicals by means of a hazard communication program including labeling, material safety data sheets, training and access to written records.

Note: For additional Non-Emergency health, safety, or environmental information, telephone (716) 286-3081.

For Emergencies: 24 HOUR EMERGENCY PHONE: (716) 278-7021

OCCIDENTAL CHEMICAL M4820 MSDS NUMBER: M4820 PRODUCT NAME: CAUSTIC SODA-BEADS

#### WARNING LABEL INFORMATION

SIGNAL WORD: DANGER!

#### STATEMENT OF HAZARDS:

CAUSES SEVERE BURNS TO SKIN, EYES AND MUCOUS MEMBRANES
CONTACT WITH EYES CAN CAUSE PERMANENT EYE DAMAGE
INHALATION OF DUST, MIST, OR SPRAY CAN CAUSE SEVERE LUNG DAMAGE
CAN REACT VIOLENTLY WITH WATER, ACIDS, AND OTHER SUBSTANCES

#### PRECAUTIONARY STATEMENTS:

Do not get into eyes, on skin, on clothing. Avoid breathing dust, mist, or spray.

Do not take internally.

Use with adequate ventilation and employ respiratory protection when exposure to dust, mist or spray is possible.
When handling, wear chemical splash goggles, face shield, rubber

gloves, and protective clothing.

Wash thoroughly after handling or contact - exposure can cause burns which are not immediately painful or visible.

Keep container closed.

Product can react violently with water, acids, and other substances - read Handling and Storage instructions below carefully before using.

oduct is corrosive to tin, aluminum, zinc and alloys containing these metals, and will react violently with these metals in Product is powder form.

Hazardous carbon monoxide gas can form upon contact with food and beverage products in enclosed spaces and can cause death. Follow appropriate tank entry procedures (ANSI Z114.1-1977).

#### FIRST AID:

#### IN CASE OF CONTACT:

#### FOR EYES:

IMMEDIATELY flush with plenty of water for at least 15 minutes, holding eyelids apart to ensure flushing of the entire eye surface. Washing eyes within several seconds is essential to achieve maximum effectiveness. SEEK MEDICAL ATTENTION IMMEDIATELY.

#### FOR SKIN:

IMMEDIATELY wash with plenty of water for 15 minutes. Remove contaminated clothing and footwear. Wash clothing before reuse and discard footwear which cannot be decontaminated. SEEK MEDICAL ATTENTION IMMEDIATELY.

#### IF INHALED:

Remove to fresh air. If breathing is difficult, have trained person administer oxygen. If respiration s mouth-to-mouth resuscitation. GET MEDICAL ATTENTION. stops, give

#### IF SWALLOWED:

DO NOT induce vomiting. Give large quantities of water. If available, give several glasses of milk. Never give anything by mouth to an unconscious person. SEEK MEDICAL ATTENTION IMMEDIATELY IMMEDIATELY.

#### IN CASE OF:

#### SPILL OR LEAK:

Leaks should be stopped. Spills, after containment, should be shoveled up or removed by vacuum truck (if liquid) to chemical waste area. Neutralize residue with dilute acid, flush spill area with water followed by liberal covering of sodium bicarbonate. Dispose of wash water and spill by-products according to federal, state, and local regulations.

OCCIDENTAL CHEMICAL
MSDS NUMBER: M4820
PRODUCT NAME: CAUSTIC SODA-BEADS

#### WARNING LABEL INFORMATION (Continued)

#### HANDLING AND STORAGE:

Considerable heat is generated when product is mixed with water. Therefore, when making solutions always carefully follow these steps:

ALWAYS wear ALL protective clothing described above. NEVER add water to product. ALWAYS add product - with constant stirring - slowly to surface of lukewarm (80-100°F) water, to assure product is being completely dissolved as it is added.

If product is added too rapidly, or without stirring, and becomes concentrated at bottom of mixing vessel, excessive heat may be generated, resulting in DANGEROUS boiling and spattering, and a possible IMMEDIATE AND VIOLENT ERUPTION of highly caustic solution.

NOTE: 50 pounds of product dissolved in 30 gallons of 90°F water will raise temperature of resulting solution to approximately 180°F. Never add more product than can be absorbed by solution while maintaining temperature below 200°F (@ sea level) to prevent boiling and spattering.

Product can react EXPLOSIVELY with acids, aldehydes, and many other organic chemicals - when mixing product with solutions containing such chemicals, follow all of above mixing instructions, and add product very gradually, while stirring constantly.

ALWAYS empty and clean containers of all residues before adding product, to avoid possible EXPLOSIVE reaction between product and unknown residue.

Returnable containers should be shipped in accordance with supplier's recommendations. Return shipments should comply with all federal, state, and DOT regulations. All residual caustic soda should be removed from containers prior to disposal.

#### DISPOSAL

The materials resulting from clean-up operations may be hazardous wastes and, therefore, subject to specific regulations. Package, store transport, and dispose of all clean-up materials and any contaminated equipment in accordance with all applicable federal, state, and local health environmental regulations. Shipments of waste materials may be subject to manifesting requirements per applicable regulations. Appropriate disposal will depend on the nature of each waste material and should be performed by competent and properly permitted contractors. Ensure that all responsible federal, state, and local agencies receive proper notification of disposal.

HMIS RATING SYSTEM: HEALTH 3 FLAMMABILITY 0 REACTIVITY 2

FOR INDUSTRIAL USE ONLY LABEL 078M4820

Dow Chemica ....

Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 15325

Page: 1

PRODUCT NAME: CAUSTIC SODA BEADS TECHNICAL GRADE

Effective Date: 12/21/88 Date Printed: 02/23/89

MSDS:000100

#### INGREDIENTS: (% w/w, unless otherwise noted)

Sodium hydroxide (NaOH) Sodium carbonate (Na2CO3) Sodium chloride (NaCl) CAS# 001310-73-2 >98.5% CAS# 000497-19-8 < 0.65% CAS# 007647-14-5 < 0.6%

Sodium sulfate (Na2SO4)

CAS# 007757-82-6 < 0.12%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

#### 2. PHYSICAL DATA:

BOILING POINT: 1390C

VAP PRESS: Not applicable

VAP DENSITY: Not applicable

SOL. IN WATER: 109 gm/100 gm @ 20C

SP. GRAVITY: 70 lbs/cu ft

MELTING POINT: 604F, 318C.

APPEARANCE: White solid.

ODOR: No odor.

#### 3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: Not applicable METHOD USED: Not applicable

FLAMMABLE LIMITS
LFL: Not applicable
UFL: Not applicable

EXTINGUISHING MEDIA: Non-combustible.

FIRE & EXPLOSION HAZARDS: In water solution caustic can react

(Continued on Page 2)
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#/sg

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 15325

Page: 2

PRODUCT NAME: CAUSTIC SODA BEADS TECHNICAL GRADE

Effective Date: 12/21/88 Date Printed: 02/23/89

MSDS:000100

#### 3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

with amphoteric metals (such as aluminum) generating hydrogen which is flammable and/or explosive if ignited.

FIRE-FIGHTING EQUIPMENT: Not available.

#### 4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Product absorbs water and carbon dioxide from the air. Keep containers closed and sealed.

INCOMPATIBILITY: Water and acid. Product is strong caustic

alkali. May react violently with water, acid, and a number of organic compounds. Caustic reacts rapidly with aluminum, tin, and zinc. It will also react with bronze and brass.

HAZARDOUS DECOMPOSITION PRODUCTS: None.

HAZARDOUS POLYMERIZATION: Will not occur.

#### 5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Only trained and properly protected personnel should be involved in spill cleanup operations. Acting cautiously, accidental spills of caustic soda beads must first be shoveled up. Then carefully, flush the spill area with water. Dilute acid, preferably acetic acid, may be used to neutralize only the final traces of caustic after flushing.

DISPOSAL METHOD: Disposal of caustic soda must meet all federal, state, and local regulations. Contact The Dow Chemical Company for additional information.

(Continued on Page 3)
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Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 15325 Page: 3

PRODUCT NAME: CAUSTIC SODA BEADS TECHNICAL GRADE

Effective Date: 12/21/88 Date Printed: 02/23/89 MSDS:000100

#### 6. HEALTH HAZARD DATA:

EYE: May cause severe irritation with corneal injury and result in permanent impairment of vision, even blindness. Dusts may irritate eyes.

SKIN CONTACT: Short single exposure may cause severe skin burns.

SKIN ABSORPTION: A single prolonged skin exposure is not likely to result in absorption of harmful amounts. The dermal LD50 has not been determined.

INGESTION: May cause gastrointestinal irritation or ulceration, and severe burns of the mouth and throat. Single dose oral LD50 has not been determined.

INHALATION: Dusts or mists may cause severe irritation to upper respiratory tract.

SYSTEMIC & OTHER EFFECTS: No systemic effects are expected.

#### 7. FIRST AID:

EYES: Wash eyes immediately and continuously until assistance arrives for transport to medical facility; wash enroute, if possible. If medical assistance is not immediately available, wash for 30 minutes and seek medical attention immediately.

SKIN: Immediate continued and thorough washing in flowing water for 30 minutes is imperative while removing contaminated clothing. Prompt medical consultation is essential. Wash contaminated clothing before reuse. Destroy contaminated shoes.

INGESTION: Do not induce vomiting. Give large amounts of water or milk if available and transport to medical facility.

INHALATION: Remove to fresh air if effects occur. Consult medical.

(Continued on Page 4)
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Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 15325

Page: 4

PRODUCT NAME: CAUSTIC SODA BEADS TECHNICAL GRADE

Effective Date: 12/21/88 Date Printed: 02/23/89 M

MSDS:000100

#### 7. FIRST AID: (CONTINUED)

NOTE TO PHYSICIAN: Corrosive. May cause stricture. If lavage is performed, suggest endotracheal and/or esophagoscopic control. Material is strong alkali. If burn is present, treat as any thermal burn, after decontamination. Eye irrigation may be necessary for an extended period of time to remove as much caustic as possible. Duration of irrigation and treatment is at the discretion of medical personnel. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

#### 8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE (S): Sodium hydroxide: ACGIH TLV is 2 mg/m3 ceiling; OSHA PEL is 2 mg/m3 (TWA).

VENTILATION: Control airborne concentrations below the exposure guideline. Local exhaust ventilation may be necessary for some operations.

RESPIRATORY PROTECTION: When airborne exposure guidelines and/or comfort levels may be exceeded, use an approved air-purifying respirator.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, hard hat with face-shield or full-body suit will depend on operation. Safety shower should be located in immediate work area. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse. Contaminated leather items, such as shoes, belts, and watchbands, should be removed and destroyed.

EYE PROTECTION: Use chemical goggles. Wear a face-shield which allows use of chemical goggles, or wear a full-face respirator, to protect face and eyes when there is any likelihood of splashes. Eye wash fountain should be located in immediate work area.

(Continued on Page 5)
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Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 15325

Page: 5

PRODUCT NAME: CAUSTIC SODA BEADS TECHNICAL GRADE

Effective Date: 12/21/88 Date Printed: 02/23/89

MSDS:000100

#### 9. ADDITIONAL INFORMATION:

REGULATORY REQUIREMENTS:

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Prevent eye and skin contact. Do not breathe dusts or mists.

Avoid storing next to strong acids. Caustic should be stored in clean, dry areas. Do not store in underground tanks. Product absorbs water and CO2 from air. Keep containers closed and sealed.

Special precautions for dissolving beads:

- Always add beads to the liquid. Never add the liquid to the beads.
- 2. The liquid should be lukewarm (80-100F). Never start with hot or cold liquid.
- 3. Always sprinkle the beads slowly over the surface of the constantly stirred liquid.

The addition of caustic soda to liquid will cause a rise in

temperature. If caustic soda becomes concentrated in one area, or is added too rapidly, or is added to hot or cold liquid, a rapid temperature increase can result in dangerous mists or boiling or spattering which may cause an immediate violent eruption.

MSDS STATUS: Revised Section 9

SARA 313 INFORMATION:

This product contains the following substances subject to the

(Continued on Page 6)

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Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 15325

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PRODUCT NAME: CAUSTIC SODA BEADS TECHNICAL GRADE

Effective Date: 12/21/88 Date Printed: 02/23/89

MSDS:000100

#### 9. ADDITIONAL INFORMATION: (CONTINUED)

reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER CONCENTRATION		
SODIUM HYDROXIDE (SOLUTION)	001310-73-2		-

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The Information Herein is Given in Good Faith, But No Warranty,
Express Or Implied, Is Made. Consult The Dow Chemical Company
For Further Information.

^{*} An Operating Unit of The Dow Chemical Company



# Occidental Chemical Corporation

**Data Sheet** 

Electrochemicals Division

1158

# 50% Caustic Soda – Diaphragm Sales Specification

COMPONENT	BASIS	SALES SPECIFICATION	
Total Aikalinity (as Na ₂ O)	Wt. %	38.7	Min.
Hydroxide Alkalinity (as NaOH)	Wt. %	50.	Min.
Na ₂ CO ₃	Wt. %	0.15	Max.
NaCl	Wt. %	1.10	Max.
NaCiO₃	Wt. %	0.12	Max.
Na ₂ SO ₄	ppm by wt.	400.	Max.
Fe	ppm by wt.	9.	Max.
Cu	ppm by wt.	0.2	Max.
NI	ppm by wt.	2.	Max.
Hg	ppm by wt.	0.01	Max.
Heavy Metals (as Pb)	ppm by wt.	15.	Max.
As	ppm by wt.	1.5	Max.

TRW-00408

0908-1774

Electrochemicals Division Occidental Tower 5005 LBJ Freeway Dalias, Texas 75244 214 / 404-3300 IMPORTANT: The information presented herein, while not guaranteed, was prepared by technical personnet and is true and accurate to the best of our knowledge. No warranty or guarantes, express of implied, is made regarding performance, stability or otherwise. This information is not intended to be all-inclusive as the manner and conditions of use, handling, storage and other factors may involve other or additional safety or performance considerations. While our technical personnel will be happy to respond to quartions regarding safe handling and use procedures, safe handling and use remains the responsibility of the customer. No suggestions for use are intended as, and nothing herein shall be construed as, a recommendation to intringe any existing patents or to violate any Federal, State or local laws.



#### GEORGE MANN & CO., INC.

MERCHANTS AND DISTRIBUTORS OF INDUSTRIAL CHEMICALS

P.O. BOX 9066 . PROVIDENCE, RHODE ISLAND 02940

MAIN OFFICE AND PLANT: HARBORSIDE BOULEVARD - MUNICIPAL DOCK TELEPHONE 401 781 - 5600

BRANCH OFFICE AND PLANT PO BOX 231 105 CENTRAL STREET - STONEHAM, MASS. 02180 , TELEPHONE 617 438 - 1335

TRW FASTENERS DIVISION 265 THIRD ST. CAMBRIDGE, MA

02142

SUBJECT: MATERIAL SAFETY DATA SHEET

Gentlemen,

OXYCHEM our supplier of 50% CANSON

50 Luchus 710 COOL DEANING CAN-

has revised their Material Safety Data Sheet. A copy of the new sheet is enclosed.

Please review this information with those responsible for the safe handling of this product.

Very truly yours,

GEORGE MANN & COMPANY

Stephen H. Monica Purchasing Manager

SHM/hc

Enclosure



ISDS NUMBER : M4806

MSDS DATE

: 01-19-90

PRODUCT NAME: 50% CAUSTIC: SODA-DIAPHRAGM

24 HOUR EMERGENCY PHONE: (716) 278-7021

#### I. PRODUCT IDENTIFICATION

#### HMIS HAZARD RATINGS

HEALTH HAZARD 3 FIRE HAZARD 0 REACTIVITY Based on the National Paint & Coatings Association HMIS rating system.

#### SARA/TITLE III HAZARD CATEGORIES (See Section X)

Immediate (ACUTE) Health: YES Delayed (Chronic) Health: NO

Fire Hazard: NO

Reactive Hazard: YES

Sudden Release of Pressure: NO

MANUFACTURER'S: Occidental Chemical Corporation

NAME AND : Customer Service, Occidental Tower, Telephone

ADDRESS : P O Box 809050, Dallas, Texas 75380 (1-800-752-5151)

CHEMICAL NAME: Sodium Hydroxide

CAS NUMBER: 1310-73-2

SYNONYMS/COMMON NAMES: Sodium Hydroxide: NaOH

CHEMICAL FORMULA: NaOH

DOT PROPER SHIPPING NAME: Sodium Hydroxide, Liquid

DOT HAZARD CLASS: Corrosive Material

DOT I.D. NUMBER: UN1824

DOT HAZARDOUS SUBSTANCE: RQ 1000#

#### II. HEALTH HAZARD INFORMATION ...

#### EMERGENCY AND FIRST AID PROCEDURES

EYES:

OBJECT IS TO FLUSH MATERIAL OUT IMMEDIATELY THEN SEEK MEDICAL ATTENTION, IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes forcibly holding lids apart to ensure flushing of entire surface. Washing eyes within several seconds is essential to achieve maximum effectiveness. SEEK MEDICAL ATTENTION IMMEDIATELY.

0908-1776

TRW-00410

#### II. HEALTH HAZARD INFORMATION (Continued)

IMMEDIATELY wash with plenty of water for at least 15 minutes. Remove contaminated clothing and footwear. Wash clothing before reuse and discard footwear which cannot be decontaminated. SEEK MEDICAL ATTENTION IMMEDIATELY.

#### INHALATION:

Remove to fresh air; if breathing is difficult have trained person administer oxygen. If respiration stops, give mouth-to-mouth resuscitation. GET MEDICAL ATTENTION.

#### INGESTION:

IGESTION:

NEVER give anything by mouth to an unconscious person. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. If available, give several glasses of milk. If vomiting occurs spontaneously, keep airway clear. SEEK MEDICAL ATTENTION IMMEDIATELY.

#### ROUTES OF EXPOSURE

#### INHALATION:

Airborne concentrations of dust, mist, or spray of this product may cause damage to the upper respiratory tract and lung tissue proper which could produce chemical pneumonia, depending upon severity of exposure.

This product is destructive to tissue contacted and produces severe burns. A latent period may exist between exposure and sense of irritation.

#### EYE CONTACT:

This product is destructive to eye tissues on contact. Will cause severe burns that result in damage to the eyes and even blindness.

#### INGESTION:

This product, if swallowed, can cause severe burns and complete tissue perforation of mucous membranes of the mouth, throat, esophagus, and stomach.

#### EFFECTS OF OVEREXPOSURE

#### ACUTE:

Corrosive to all body tissues with which it comes in contact. The effect of local dermal exposure may consist of multiple areas of superficial destruction of the skin or of primary irritant dermatitis. Similarly, inhalation of dust, spray, or mist may result in varying degrees of irritation or damage to the respiratory tract tissues and an increased susceptibility to respiratory illness. These effects occur only when the TLV is exceeded.

#### CHRONIC:

No known chronic effects.

#### TOXICOLOGY DATA:

Caustic soda is a corrosive material.
Acute Oral LD50 = 140-340 mg/kg (rat)
Acute Dermal LD50 = 1350 mg/kg (rabbit)

#### Human Dermal Exposure

All the property of the common party of the common the common that the common the common that the common the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the common that the comm

Regardless of concentrations, the severity of damage and extent Prolonged contact with even dilute sodium hydroxide solution can cause a high degree of tissue destruction. The latent period, following skin contact during which no sensation of irritation occurs, varies from several hours for 0.4 - 4% solution to 3 minutes with 25 - 50% solution.

TRW-0 of its irreversibility increases with length of contact time. Prolonged contact with even dilute sodium hydroxide solution can

TRW-00411

Page 3 of 9 01-19-90

CCCIDENTAL CHEMICAL
MSDS NUMBER: M4806
PRODUCT NAME: 50% CAUSTIC SODA-DIAPHRAGM ...

JII. IMPORTANT COMPONENTS

CAS NUMBER / NAME

1310732 Sodium hydroxide (Na(OH))

EXPOSURE LIMITS

: PEL=2 mg/m3. Ceiling TLV=2 mg/m3. Ceiling PERCENTAGE

VOL 31.90 50

COMMON NAMES: CAUSTIC SODA

Listed On(List Legend Below):

7732185

EXPOSURE LIMITS

PEL=Not Established TLV=Not Established

PERCENTAGE

VOL 68.10 50

COMMON NAMES:

Listed On(List Legend Below):

See Section II All components of this product that are required to be on the TSCA Inventory are listed on the inventory.

Not listed as carcinogen - IARC, NTP, OSHA

LIST LEGEND

13 PA ENVIROMENTAL HAZ SUBSTANCE 19 PA REQUIREMENT- 3% OR GREATER

18 NY HAZARDOUS SUBSTANCES 21 NJ SPECIAL HEALTH HAZ SUB

#### IV. FIRE AND EXPLOSION DATA

FLASH POINT: NA

AUTOIGNITION TEMPERATURE: Nonflammable

FLAMMABLE LIMITS IN AIR. % BY VOLUME~ UPPER: LOWER: NA

EXTINGUISHING MEDIA:

This product is not combustible. Water spray, foam, carbon dioxide or dry chemical may be used where this product is stored.

SPECIAL FIRE FIGHTING PROCEDURES:

Wear full protective clothing. Avoid direct contact of this product with water as this can cause a violent exothermic reaction.

UNUSUAL FIRE AND EXPLOSION HAZARD:

None. See Reactivity (Section VII).

#### V. SPECIAL PROTECTION

#### VENTILATION REQUIREMENTS:

Special ventilation is not required under normal use. Use local exhaust ventilation where dust, mist, or spray may be generated. NOTE: Where carbon monoxide or other reaction products may be generated, special ventilation may be required.

#### SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

#### RESPIRATORY:

Respiratory protection is not required under normal use. Use NIOSH/MSHA approved respirators where dust, mist, or spray may be generated.

#### EYE:

Wear chemical safety goggles plus full face shield to protect against splashing.

#### GLOVES:

Chemical resistant gloves should be worn. Gloves may be decontaminated by washing with mild soap and water. Natural and butyl rubber have been suggested.

#### OTHER CLOTHING AND EQUIPMENT:

Impervious protective clothing and chemically resistant safety shoes should be worn to minimize contact. Wash contaminated clothing with soap and water and dry before reuse. Showers and eyewash facilities should be accessible.

#### MONITORING EXPOSURE

#### BIOLOGICAL:

NA

#### PERSONAL/AREA:

Use NIOSH Analytical Method No. 7401.

#### VI. PHYSICAL DATA

BOILING POINT @ 760 mm Hg: 143°C (289°F)

FREEZING POINT: 12.1°C (54°F)

VAPOR PRESSURE: 13 mm Hg @ 60°C

SPECIFIC GRAVITY (H20=1): 1.54 @ 15.6°C

SOLUBILITY IN H2O % BY WT: Completely soluble

VAPOR DENSITY (Air=1): NA

APPEARANCE AND ODOR: Clear liquid with no distinct odor.

pH: 7.5% solution has pH 14.0

DENSITY: 12.8 1b/ga1

TRW-00413

0908-1779

CCCIDENTAL CHEMICAL MSDS NUMBER: M480 M4806 PRODUCT NAME: 50% CAUSTIC SODA-DIAPHRAGM

#### VII. REACTIVITY DATA

#### CONDITIONS CONTRIBUTING TO INSTABILITY:

Under normal conditions, this product is stable.

#### INCOMPATIBILITY:

See Handling and Storage (Section VIII). Avoid direct contact with water. This product may be added slowly to water or acids with dilution and agitation to avoid a violent exothermic reaction. When handling this product, avoid contact with aluminum, tin, zinc, and alloys containing these metals. Do not mix with strong acids without dilution and agitation to prevent violent or explosive reaction. Avoid contact with leather, wool, acids, organic halogen compounds and organic nitro compounds.

## HAZARDOUS DECOMPOSITION PRODUCTS:

None known.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: Material is not known to polymerize.

#### VIII. HANDLING AND STORAGE

#### HANDLING AND STORAGE PRECAUTIONS:

Do not get into eyes, on skin, on clothing.

Avoid breathing dust, mists, or spray. Do not take internally.

Use with adequate ventilation and employ respiratory protection when exposure to dust, mist or spray is possible.
When handling, wear chemical splash goggles, face shield, rubber

gloves and protective clothing.
Wash thoroughly after handling or contact - exposure can cause burns which are not immediately painful or visible. Keep container closed.

Product can react violently with water, acids, and other substances - read Special Mixing and Handling Instructions below carefully before using.

Product is corrosive to tin, aluminum, zinc and alloys containing these metals, and will react violently with these metals in powder form.

Hazardous carbon monoxide gas can form upon contact with food and beverage products in enclosed spaces and can cause death. Follow appropriate tank entry procedures (ANSI Z117.1-1977). can form upon contact with food and

#### SPECIAL MIXING AND HANDLING INSTRUCTIONS

Product can react violently with water. Considerable heat is generated when product is mixed with water. Therefore, when making solutions always carefully follow these steps:

ALWAYS wear ALL protective clothing described above. NEVER add water to product. ALWAYS add product - with constant stirring - slowly to surface of lukewarm (80-100°F) water, to assure product is being completely dissolved as it is added.

If product is added too rapidly, or without stirring, and becomes concentrated at bottom of mixing vessel, excessive heat may be generated, resulting in DANGEROUS boiling and spattering, and a possible IMMEDIATE AND VIOLENT ERUPTION of highly caustic solution.

#### VIII. HANDLING AND STORAGE (Continued)

#### SPECIAL MIXING AND HANDLING INSTRUCTIONS (Continued)

NOTE: Never add more product than can be absorbed by solution while maintaining temperature below 200°F (@ sea level) to prevent boiling and spattering.

Product can react EXPLOSIVELY with acids, aldehydes, and many other organic chemicals - when mixing product with solutions containing such chemicals, follow all of above mixing instructions, and add product very gradually, while stirring constantly.

-ALWAYS empty and clean containers of all residues before adding product, to avoid possible EXPLOSIVE reaction between product and unknown residue. constantly.

unknown restdue.

Returnable containers should be shipped in accordance with supplier's recommendations. Return shipments should comply with all federal, state, and DOT regulations. All residual caustic soda should be removed from containers prior to disposal.

#### IX. ENVIRONMENTAL PROCEDURES

#### STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Leaks should be stopped. Spills should be contained and cleaned up immediately. Spills should be removed by using a vacuum truck. Neutralize remaining traces of material with any dilute inorganic acid such as hydrochloric, sulfuric, nitric, phosphoric, and acetic acid. The spill area should then be flushed with water followed by liberal covering of sodium bicarbonate. All clean-up material should be removed and placed in approved containers, labeled and stored in a safe place to await proper treatment or disposal. Spills on areas other than pavement, e.g., dirt or sand, may be handled by removing the affected soils and placing in approved containers. Persons performing clean-up work should wear adequate personal protective equipment and clothing. Spills or releases should be reported, if required, to the appropriate local, state and federal regulatory agencies.

CAUTION: Caustic soda may react violently acids and water.

#### WASTE DISPOSAL METHOD:

The materials resulting from clean-up operations may be hazardous wastes and, therefore, subject to specific regulations. Package, store, transport, and dispose of all clean-up materials and any contaminated equipment in accordance with all applicable federal, state, and local health and environmental regulations. Shipments of waste materials may be subject to manifesting requirements per applicable regulations. Appropriate disposal will depend on the nature of each waste material and should be performed by competent and properly permitted contractors. Ensure that all responsible federal, state, and local agencies receive proper notification of spill and disposal methods. The materials resulting from clean-up operations may be

TRW-00415

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CCCIDENTAL CHEMICAL MSDS NUMBER: M480 PRODUCT NAME: 50% M4806

50% CAUSTIC SODA-DIAPHRAGM

### X. ADDITIONAL INFORMATION

Standard 29CFR 1910.1200 requires that information provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, material safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Material Safety Data Sheet available to your employees. ...

To aid our customers in complying with regulatory requirements. SARA Title III hazard categories for this product are indicated in Section I. If the word "YES" appears next to any category, this product may be reportable by you under the requirements of 40 CFR Part 370. Please consult those regulations for details.

### XI. PREPARATION INFORMATION

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For additional Non-Emergency health, safety, or enformation telephone (716) 286-3081, or write to:

Occidental Chemical Corporation

Product Stewardship Department or environmental Suite 400 360 Rainbow Boulevard South Niagara Falls, NY . . 14302

For Emergencies: 24 HOUR EMERGENCY PHONE: (716) 278-7021

This MSDS replaces MSDS Number M4806 dated 07-14-89.

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### WARNING LABEL INFORMATION

### SIGNAL WORD: - DANGER!

STATEMENT OF HAZARDS: CAUSES SEVERE BURNS TO SKIN, EYES AND MUCOUS MEMBRANES.
CONTACT WITH EYES CAN CAUSE PERMANENT EYE DAMAGE.
INHALATION OF DUST, MIST, OR SPRAY CAN CAUSE SEVERE LUNG DAMAGE.
CAN REACT VIOLENTLY WITH WATER, ACIDS, AND OTHER SUBSTANCES.

### PRECAUTIONARY STATEMENTS:

. . <del>-</del>. • .

Do not get into eyes, on skin, on clothing.

Avoid breathing dust, mist, or spray.

Do not take internally.

Use with adequate ventilation and employ respiratory protection when exposure to dust, mist, or spray is possible.

When handling, wear chemical splash goggles, face shield, rubber gloves and protective clothing.

Wash thoroughly after handling or contact - exposure can cause burns which are not immediately painful or visible.

Keen container closed.

Product can react violently with water, acids, and other substances - read Handling and Storage instructions carefully before using. Product is corrosive to tin, aluminum, zinc, and alloys containing these metals, and will react violently with these metals in powder form.

Hazardous carbon monoxide gas can form upon contact with food and beverage products in enclosed spaces and can cause death. Follow appropriate tank entry procedures (ANSI Z117.1-1977).

## FIRST AID: IN CASE OF CONTACT:

FOR EYES:

OBJECT IS TO FLUSH MATERIAL OUT IMMEDIATELY THEN SEEK MEDICAL ATTENTION. IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes forcibly holding lids apart to ensure flushing of entire surface. Washing eyes within several seconds is essential to achieve maximum effectiveness. SEEK MEDICAL ATTENTION IMMEDIATELY.

IMMEDIATELY wash with plenty of water for at least 15 minutes. Remove contaminated clothing and footwear. Wash clothing before reuse and discard footwear which cannot be decontaminated. SEEK MEDICAL ATTENTION IMMEDIATELY.

Remove to fresh air. If breathing is difficult, have trained person administer oxygen. If respiration stops, give mouth-to-mouth resuscitation. GET MEDICAL ATTENTION.

### IF SWALLOWED:

NEVER give anything by mouth to an unconscious person. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. If available, give several glasses of milk. If vomiting occurs spontaneously, keep airway clear. SEEK MEDICAL ATTENTION IMMEDIATELY.

# IN CASE OF: SPILL OR LEAK:

Leaks should be stopped. Spills, after containment, should be shoveled up or removed by vacuum truck (if liquid) to chemical waste area. Neutralize residue with dilute acid, flush spill area with water followed by liberal covering of sodium bicarbonate. Dispose of wash water and spill by-products according to federal, state, and local regulations.

TRW-00417

0908-1783

OCCIDENTAL CHEMICAL MSDS NUMBER: M4806

PRODUCT NAME: 50% CAUSTIC SODA-DIAPHRAGM

### WARNING LABEL INFORMATION (Continued)

### HANDLING AND STORAGE:

Considerable heat is generated when product is mixed with water. Therefore, when making solutions always carefully follow these steps:

ALWAYS wear ALL prescribed protective clothing. NEVER add water to product. ALWAYS add product - with constant stirring - slowly to surface of lukewarm (80-100°F) water, to assure product is being completely dissolved as it is added.

If product is added too rapidly, or without stirring, and becomes concentrated at bottom of mixing vessel, excessive heat may be generated, resulting in DANGEROUS boiling and spattering, and a possible IMMEDIATE AND VIOLENT ERUPTION of highly caustic solution.

NOTE: Never add more product than can be absorbed by solution while maintaining temperature below 200°F (@ sea level) to prevent boiling and spattering.

Product can react EXPLOSIVELY with acids, aldehydes, and many other organic chemicals - when mixing product with solutions containing such chemicals, follow all of above mixing instructions, and add product very gradually, while stirring constantly.

ALWAYS empty and clean containers of all residues before adding product, to avoid possible EXPLOSIVE reaction between product and unknown residue.

Returnable containers should be shipped in accordance with supplier's recommendations. Return shipments should comply with all federal, state, and DOT regulations. All residual caustic soda should be removed from containers prior to disposal.

### DISPOSAL:

The materials resulting from clean-up operations may be hazardous wastes and, therefore, subject to specific regulations. Package, store, transport, and dispose of all clean-up materials and any contaminated equipment in accordance with all applicable federal, state, and local health environmental regulations. Shipments of waste materials may be subject to manifesting requirements per applicable regulations. Appropriate disposal will depend on the nature of each waste material and should be performed by competent and properly permitted contractors. Ensure that all responsible federal, state, and local agencies receive proper notification of disposal.

INFORMATION REQUIRED BY FEDERAL, STATE OR LOCAL REGULATIONS:
This product contains:

CAS# NAME 1310732 Sodium hydroxide (Na(OH))

7732185 Water

HMIS RATING SYSTEM: HEALTH 3 FLAMMABILITY 0 REACTIVITY 2 .

R INDUSTRIAL USE ONLY LABEL 097M4806

Page 9 of 9 01-19-90

### IL UMILLI WALL

(APPROVED BY THE U.S. DEPARTMENT OF LABOR AS . "essentially similar" to form LSB-00S-4)

### FOR HAZARDOUS PRODUCTS USED IN PLACES OF EMPLOYMENT

		Section	NAME	& PRODUCT			
MANUFACTURER					EMERGENCY (b)		4 HOURS
STREET ADDRESS	CHEMICATION	RANY		y	-517-4880		
			•	For latest data,	1/3/ - 4		N
CITY, STATE, ZIF	W CENTER			sult manufacture	ERTIFYING COMPAN	-	
•		40		(1)	ENTITY THE COMPAN	Y OFFICIAL	ð
CHEMICAL NAME	, MICHGAN 4864				Ann	un,	
(g) Q			•	ea Cadium	Translation of a ST	0.24 - 0.	_ 4 • .
FORMULA OF PRI			4-4- A.A. / L.)	e, Soutum	Hydroxide, W	nite Cai	istic_
		•					
(h)	, BY- 4	OTT					
	Na	OH					
		•	INGREDIENTS				TLV
·	Section	1 2		·		%	(units)
						.	_
	NaOH (minim	ium)				96.8	2  mg/m
					•		
504 140 5044	- 105 \	Section :		CAL DATA	( ( ( ) )		
BOILING POINT		1390 C.		CIFIC GRAVITY		T A	
	RE (mmHgat 20°c)	N.A.		VOLATILE BY		V.A.	<del></del>
VAPOR DENSIT		N.A.		LOR AND ODOR		- none	
SOLUBILITY IN	WATER @ 20°C	109 gm/100		YSICAL STATE	Sol	<u>1d</u>	
FLASH POINT (AN		lion 4 FIRE		OSION HAZARD			
N.A.	°F		1, 51	. Non-flamn	nahlelu E i		
.EXTIN-				. Iton Hami	OTHER		·
GUISHING MEDIA:	WATER FO	AM ALCOH	Or C	DRY CHEMI			
	GHTING PROTECTIVE			1 12.72.11	<del></del>		<del></del>
• • •							
	·						
UNUSUAL FIRE A	ND EXPLOSION HAZAF	₹D\$					
In wate	er solution cau	stic can read	ct with am	photeric me	etals (such as	alumin	ım)
					•		
genera	ting hydrogen	which is flar	nmable ar	d/or explos	ive.		
		Section 5		VITY DATA			
-	NORMAL	16. CONDITIONS TO	O A VOID			<b>)</b>	
STABILITY	CONDITIONS X				4	Z	<b>Y</b>
JIADICITI	FIRE			·0 ~	<i>'</i> 7.	, , , , , , , , , , , , , , , , , , ,	
	CONDITIONS	Melting	g point 318	^в С.		<i>€</i> ) 4%	·
'INCOMPAT-				. —	.ن ح	OX (DISSIN	G
IBILITY	WATER	XACID	BASE		RROSIVE	MATERIA	<u> </u>
(Materials to	[ F.3					ૢૢૢૢૢૢૢૢૢૢૢૢૼ૾ૼ	
avoid)	X OTHER:		STRONG (	CAUSTIC AI	'KALI' '	98	
	Own US FRON PRODUCT	, ,			<del>K</del>	· 60	
None	·r	100 COURTER -	0.446:5:			_	
HAZARDOUS	MAY	20.CONDITIONS TO	G AVOID			TRI	V-00419
POLYMERIZA-	OCCUR	ļ <del></del>		<del></del>		-	· •••
TION	WILL NOT X	1		0908	3-1785		
	1 OCCUR IA			erre			

ORAL INGESTION	Section 6	HEALTH HAZARD DATA	
Most_seri	ous effect is corrosion of	tissues. LD ₅₀ not available.	
A burn.			. (
			· · · · · · · · · · · · · · · · · · ·
A burn.			
Not likely	a problem.	· · · · · · · · · · · · · · · · · · ·	
TLV dusts	s 2 mg/cu meter.		
Dusts ver	y irritating to upper respi	ratory tract. Main effect, tissue dan	nage.
FIRST AID PROCEDU	Inhalation - If any il	lness occurs get patient to clean fres	h air,
	quiet and warm and get meyes - Immediately flush	with plenty of water for at least 15 mi	inutes. If
medical_a	ttention has not arrived co	ntinue for second 15 minutes. Remo	ve contaminate
clothing. DO NOT i	nduce vomiting.	or plenty of water and call physician i	mmediately.
STEPS TO BE TAKE	Section 7 SP  N IN CASE MATERIAL IS RELEASED OR 8	PILLED	
Shovel up.	follow by flushing with w	ater. Neutralize with dilute acid to r	<u>emove</u>
final trace	es.		·
Dilute wel	l with water, then neutral	ize with acid.	
			<del></del>
		AL PROTECTION INFORMATION	{
VENTILATION	X	SPECIAL	,
	MECHANICAL (General)	OTHER	<del></del>
RESPIRATORY PROT	FECTION (SPECIFY TYPE)		·
Dust respi			<del></del>
		ves, apron, boots, gauntlets.	· .
NOT NORMALI NECESSARY	LY SAFETY GLASSES WITHOUT SIDE SHIELDS	SAFETY GLASSES - CHEMICAL	 BOGGLES
GAS TIGHT G	OGGLES		
OTHER PROTECTIVE		Il face shield to protect face.	
PRECAUTIONS TO B	Section 9 SPECIAL PR	ECAUTIONS OR OTHER COMMENTS	
Avoid eye	and skin contact. Produc	t is deliquescent and absorbs H2O and	CO ⁵
from air.	Keep containers closed a	nd sealed. Solution with water gener	ates
excessive	heat and mist.		
<del></del>	15		
OTHER PRECAUTION	of ananton than A 50% and	viscous and very slippery.	,

Form Approved Budget Bureau No. 44-R1387 Approval Expires April 30, 1971

### U.S. DEPARTMENT OF LABOR

Form No. LSB-005-4 May 1969

WORKPLACE STANDARDS ADMINISTRATION
Bureau of Labor Standards

# MATERIAL SAFETY DATA SHEET

MINITIMIN		ONI L	II DAIN SHELI		
		SECT	ION 1		
Pro These tries; Incorporate	ad		EMERGENCY TELEPHONE	30.	
One Gateway Center, Pittsbut	ŕgh,		15222		
CHEMICAL NAME AND SYNONYMS SOLIT AND SYNONYMS POTASS	siur	n Hydr	oxide Solid and Flake Cau	stic	Potast
CHEMICAL FAMILY Alkali			FORMULA KOH	<del></del>	
20 0000					
SECTION	<u> III</u>	<del>.</del> .	YSICAL DATA	<del> i</del>	
PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	*	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS		!			
HAZARDOUS MIXTURES	OF (	THER LIQ	UIDS, SOLIDS, OR GASES	*	TLV (Units)
			310,000,000	+	(0,,
<del></del>				+-	
				+-	
					<del>  </del>
	=				
SE	CTI	ION II	HAZARDOUS		
BOILING POINT (F)	240	08 F	SPECIFIC GRAVITY (H20=1)	2.	044
VAPOR PRESSURE (mm Hg.) 1 mm @	71	19 C	PERCENT VOLATILE BY VOLUME 1%)		NA
VAPOR DENSITY (AIR=1)		NA	EVAPORATION RATE		NA
SOLUBILITY IN WATER APPE	eci	lable			-
APPEARANCE AND ODOR White to 1			y, no odor		
	=				
SECTION IV FI	RE	AND F	EXPLOSION HAZARD DATA	<del></del>	
Noncombustible			FLAMMABLE LIMITS Let		Uel
EXTINGUISHING MEDIA					
SPECIAL FIRE FIGHTING PROCEDURES					
UNUSUAL FIRE AND EXPLOSION HAZARDS		-			

### SECTION V HEALTH HAZARD DATA

None to assigned to caustic potash; 2 Mq/M³ (Dust, 1969) for comparable caustics of overexposure Solid and flake caustic potashis dostructive to ticaustics of the caustics of the caustic potashis dostructive to ticaustics.

EFFECTS OF OVEREXPOSURE Solid and flake caustic potashis destructive to tissues, producing severe burns. Dust inhalation can injure respiratory tract.

In case of contact, ommediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get prompt medical attention.

Contaminated clothing and shoes should be removed and washed before re-use.

	SI	ECTION	VI R	CACTIVITY DATA						
STABILITY	ABILITY UNSTABLE		CONDITION	CONDITIONS TO AVOID						
	STABLE	х	Avoid	conact with some organic material						
INCOMPATABILIT	Y (Materials to avoid)	Na								
HAZARDOUS DEC	OMPOSITION PRODUC	rs Na								
HAZARDOUS	MAY OCC	;UR		CONDITIONS TO AVOID						
POLYMERIZATION	WILL NOT	r occur	Х							

### SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Spilled flake or solid caustic potash may be shoveled up, followed by flushing with water. Dilute acetic acid may be used to neutralize final races of caustic potash immediately after flushing.

waste Disposal MethoWaste caustic potash solution should not be discharged directly into sewers or streams. Caustic potash should first be neutralized with dilute acid and then well diluted with water.

	SECTION VIII SPECI	AL PROTECTION INFORMATIO	N
RESPIRATORY PROT	Bureau of Mines Approved	Filter-Type Dust Respirtors	
VENTILATION		dust accumulation	
	MECHANICAL (General)	OTHER	
PROTECTIVE GLOV	Rubber gloves	Eldseffeting safety goggle	es
REBRUECHE	for with safety toes, ru	bber aprons, PVC clorhing, "H	lard" hat

								_	AUTIC				
PRECAUTIONS TO BE													
Avoid beea	thing	dust.	Do	not	tak	e in	terna	ally.	Wear	safet	v egi	iion	ient

OTHER PRECAUTIONS when handling caustic potable.

REPORT NUMBER: 971 MSDS NO: DW15216

E TOTIVE DATE: 01/20/92

VAN WATERS & ROGERS INC.

MATERIAL SAFETY DATA SHEET

FAGE: 001 VERSION: 003

PRODUCT: CAUSTIC SUDA SOLUTION 50%

ORDER NO: PRO0 NO :

VAN WATERS & ROGERS INC. , SUBSIDIARY OF UNIVAR (206)889-3400 6100 CARILLON POINT , KIRKLAND , **W**A 98033

----- EMERGENCY ASSISTANCE ------

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMTREC (800)424-9300

----- FOR PRODUCT AND SALES INFORMATION ------

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE AT 508-745-3700 SALEM , MA VW&R BOSTON

Product Name: CAUSTIC SODA SOLUTION 50% The same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the sa

VWAR MSD Number DW15216

INGREDIENTS: (% w/w, unless otherwise noted) 1.

CAS# 001310-73-2 48.5-50.5% Sodium hydroxide (NaOH) Sodium carbonate (Na2003) CAS# 000497-19-8 <0.2% Sodium chloride (NaCl) <1.0% CAS# 007647-14-5 BAL

Water CAS# 007732-18-5
This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

## 2. PHYSICAL DATA:

BOILING POINT: Approximately 293F, 145C FREEZING POINT: Approximately 58F, 14C VAP. PRESS: 1.5 mmHg, 0.2 kPa @ 200

VAP, DENSITY: Not applicable SOL. IN WATER: Water solution

SP. GRAVITY: *@ 20C (Dens.) 1.52 g/ml

0908-1789

TRW-00423

REPORT NUMBER: 971 MSDS NO: DW15216

VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET

E SCTIVE DATE: 01/20/92

VERSION: 003

PAGE: 002

PRODUCT: CAUSTIC SODA SOLUTION 50%

ORDER NO: PROD NO:

AFPEARANCE: Colorless to slightly colored liquid. ODOR: No odor.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: None

METHOD USED: Not applicable

FLAMMABLE LIMITS LFL: Not applic. UFL: Not applic.

EXTINGUISHING MEDIA: Non-combustible.

FIRE & EXPLOSION HAZAROS: In water solution caustic can react with amphateric metals (such as aluminum) generating hydrogen which is flammable and/or explosive if ignited.

FIRE-FIGHTING EQUIPMENT: Wear self-contained (positive-pressure if available) breathing apparatus and full protective clothing.

### 4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Product absorbs carbon dioxide from the air. Keep containers closed and sealed.

INCOMPATIBILITY: Water and acid. Product is strong caustic alkali. May react violently with water, acid, and a number of organic compounds. Caustic reacts rapidly with aluminum, tin, and zinc. It will also react with bronze and brass.

HAZAROOUS DECOMPOSITION PRODUCTS: None.

HAZARDOUS POLYMERIZATION: Will not occur.

### 5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Only trained and properly protected personnel should be involved in spill cleanup operations. Acting cautiously, small accidental spills of caustic soda solution should be carefully flushed with water. Dilute acid, preferably acetic acid, may be used to neutralize only the final traces of caustic after flushing.

DISPOSAL METHOD: Disposal of caustic soda must meet all federal, state, and local regulations. Contact The Dow Chemical Company for additional information.

REPORT NUMBER: 971 MSDS NO: 0W15216

VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET

ET TOTIVE DATE: 01/20/92

VERSION: 003

FAGE: 003

PRODUCT: CAUSTIC SODA SOLUTION 50%

ORDER NO: PROD NO:

### 6. HEALTH HAZARD DATA:

EYE: May cause severe irritation with corneal injury and result in permanent impairment of vision, even blindness. Busts may irritate eyes.

SKIN CONTACT: Short single exposure may cause severe skin burns.

SKIN ABSORPTION: A single prolonged skin exposure is not likely to result in absorption of harmful amounts. The dermal LD50 has not been determined.

INGESTION: May cause gastrointestinal irritation or ulceration and severe burns of the mouth and throat. Single dose oral LD50 has not been determined.

INMALATION: Susts or mists may cause severe irritation to apper respiratory tract.

SYSTEMIC & OTHER EFFECTS: No relevant information found.

### 7. FIRST AID:

EYES: WATER is the only accepted method of removal of caustic soda (lye) from the eyes or skin. You may have 10 seconds or less to avoid serious permanent injury. Therefore, IMMEDIATE first aid must be given after any injurious exposure. Moving the victim from water access for transport to medical aid should be done only on the advice of qualified medical personnel. While transporting victim to a medical facility, continue washing if possible.

In case of eye contact, wash eyes immediately and continuously for 30 minutes. Call for medical assistance immediately.

SKIN: Immediate continued and thorough washing in flowing water for 30 minutes is imperative while removing contaminated clothing. Prompt medical consultation is essential. Wash contaminated clothing before reuse. Destroy contaminated shoes.

INGESTION: Do not induce vomiting. Give large amounts of water or milk if available and transport to medical facility.

INHALATION: Remove to fresh air if effects occur. Consult medical.

NOTE TO PHYSICIAN: Corrosive. May cause stricture. If lavage

REPORT NUMBER: 971 MSDS NO: DW15216

VAN WATERS & ROCERS INC. MATERIAL SAFETY DATA SHEET

PRODUCT: CAUSTIC SODA SOLUTION 50%

ORDER NO: PROD NO :

FAGE: 004

VERSION: 003

is performed, suggest endutracheal and/or esophagoscopic control. Material is strong alkali. If burn is present, treat as any thermal burn, after decontamination. For burns of skinonly. Eye irrigation may be necessary for an extended period of time to remove as much caustic as possible. Duration of irrigation and treatment is at the discretion of medical personnel. No specific antidate. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

### 8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): Sodium hydroxide: OSHA FEL and ACGIH TLV are 2 mg/m3 Ceiling.

VENTILATION: Control airborne concentrations below the exposure guideline. Good general ventilation sufficient for most operations.

RESPIRATORY FROTECTION: In misty atmospheres, use an approved. mist respirator. If respiratory irritation is experienced, use an approved air-purifying respirator.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, hard hat with face-shield or full-body suit will depend on operation. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse.

EYE PROTECTION: Use chemical goggles. Full face shield in addition to soggles may be desirable to protect face. Maintain eye wash fountain and safety shower at or near work area.

### 9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Prevent eye and skin contact. Do not breathe dusts or mists.

Avoid storing next to strong acids. Caustic should be stored in clean, dry areas. Do not store in underground tanks. Product absorbs CO2 from air. Keep containers closed and sealed.

SPECIAL PRECAUTIONS FOR DILUTING CAUSTIC SODA SOLUTION:

- 1. ALWAYS add caustic soda solution to water with constant agitation. NEVER add water to the caustic soda solution.
- The water should be lukewarm (80-100F). NEVER start with hot or cold water.

REPORT NUMBER: 971 MSPS NO: DW15216 VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET

E. .CTIVE DATE: 01/20/92

VERSION: 003

PAGE: 005

PRODUCT: CAUSTIC SODA SOLUTION 50%

ORDER NO: PROD NO:

The addition of caustic soda to liquid will cause a rise in temperature. If caustic soda becomes concentrated in one area, or is added too rapidly, or is added to hot or cold liquid, a rapid temperature increase can result in DANGEROUS mists or boiling or spattering which may cause an immediate VIOLENT ERUPTION.

MSDS STATUS: Revised section 9 and regsheet.

REGULATORY INFORMATION: (Not meant to be all-inclusive--selected regulations represented).

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location of another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See MSD Sheet for health and safety information.

## U.S. REGULATIONS

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard

## CANADIAN REGULATIONS

The Workplace Hazardous Materials Information System (W.H.M.I.S.) Classification for this product is:

The Transportation of Dangerous Goods Act (T.D.G.A.) classification for this product is:

REPORT NUMBER: 971 MSDS NO: DW15216

VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET

E COTIVE DATE: 01/20/92

VERSION: 003

PAGE: 006

PRODUCT: CAUSTIC SODA SOLUTION 50%

GROER NO: PROD NO :

Sedium Hydroxide, Solution/Class 8, (9.2)/UN1824/II

CONTACT: MSDS COGRDINATOR

VW&R BOSTON

DURING BUSINESS HOURS, PACIFIC TIME (208)889-3400

11/05/92 05:14 PROBUCT: CUST NO:

ORDER NO:

NOTICE -----

** VAN WATERS & ROGERS INC. ("VW&R") EXPRESSLY DISCLAIMS ALL EXPRESS OR

In. LIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED HEREIN. **

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS BELIEVED TO BE ACCURATE, VW&R MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VW&RS CONTROL AND THEREFORE USERS ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THE ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM THE PUBLICATION OR USE OF, OR RELIANCE UPON , INFORMATION CONTAINED HEREIN. THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER PROCESS.

END OF MSDS

NOT JSCF. Ady Make was used in

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved OMB No. 44-R1397

			alth Regulations for Ship Repairing, 1 (29 CFR 1915, 1916, 1917)		
Simplify an	14 J	i por cak i i i	1 123 CFR 1313, 1310, 1317)		
		SECT	ON I		
MANUFACTURER'S NAME Coatings Big! Heer his Corp.			EMERGENCY TELEPHON	IE NG.	- '
ADDRESS (Number, Street, City, State, and ZIP Cint 33 Union Ave., Sudbury, MA	e)	01776		<b></b> -	
MEK/MIBK/IsobutanolAresins	J		TRADE NAME AND SYNONYMS	r	
CHEMICAL FAMILY			FORMULA		
SECTION	<u>                                      </u>		DOUS INGREDIENTS	·	
PAINTS, PRESERVATIVES, & SOLVENTS	*	TLV (Units)	ALLOYS AND METALLIC COATINGS	-	TLV (Units:
PIGMENTS		n.a	BASE METAL		<u>n.a</u>
CATALYST		n.a	ALLOYS		n.a
VEHICLE	10	n.a	METALLIC COATINGS		n.a
SOLVENTS	90	50ppm	FILLER METAL PLUS COATING OR CORE FLUX		<u>n.a</u>
ADDITIVES		n.a	OTHERS		
OTHERS		n.a			
HAZARDOUS MIXTURES	OF (	THER LIQ	UIDS, SOLIDS, OR GASES	*	TLV (Units)
:			```		
	÷	ı <b>t</b>	11		
SEC.	TIO	N III . P	HYSICAL DATA		
<b>3EO</b>					

SE	CTION III - P	HYSICAL DATA	
BOILING POINT (PF.)	176	SPECIFIC GRAVITY (H2O=1)	.84_
VAPOR PRESSURE (mm Hg.) C 68°F	60	PERCENT, VOCATILE	90
VAPOR DENSITY (AIR+1)	Approx3.0	EVAPORATION RATE: 111	2.5
SOLUBILITY IN WATER	Moderate	* × × × × × × × × × × × × × × × × × × ×	
APPEARANCE AND ODOR Colorles	s Mobile L	iquid. Pungent Odor	

SECTION IV - FIRE AND	EXPLOSION HAZARD DAT	A	
FLASH POINT (Method used) 25 °F TCC	FLAMMABILE LIMITS	1.8	11.5
EXTINGUISHING MEDIA Alcohol foam, CO4, d	ry chemical		
SPECIAL FIRE FIGHTING PROCEDURES Handle as very flammable liqu			
UNUSUAL FIRE AND EXPLOSION HAZARDS			TRW-0042
	0908-1795		

SECTION V · HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE 50 ppm
Liquid may cause eye burns, dizziness, nausea, headache, lack of
coordination,
Remove victim to fresh air. Give artificial respiration if breathing
has stopped.
CECTION M. DEACTIVITY DATA

		3EC11	ION VI - REACTIVITY DATA
STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	N.A.
HAZARDOUS DE As with	ecomposition pany organi	RODUCTS C materi	
HAZARDOUS DE AS WITH HAZARDOUS	any organi	RODUCTS C materi occur	

SECTION VII - SPILL OR LE	EAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED ON SPILLED Fliminate all ignition sources	)
Flush spill away with water spray.	Small spills may be collected
with absorbent material.	
waste disposal METHOD Flush with water, controlled burning	ng
·	

	SECTION VIII - SPE	CIAL PROTECTION INFORMATION
RESPIRATORY P	HETECTION (Specify type) Air	Pack or Organic Canistor
MENTILATION	LOCAL EXHAUST As Requi	red
	MECHANICAL (General)	OTHEP
PROTECTIVE GL	Rubber	Goggles to prevent splashing in o
OTHLE PROTECT	IVE EQUIPMENT	- Carrier Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Contract Co

SECTION IX - SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Very flammable. Prevent skin contact to avoid defatting action.	
Use normal good personal hygiene. TRW	-00430

Anguay .

### U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

Form Approved OMB No. 44-R1387

# MATERIAL SAFETY DATA

Required under USOL Safety and Health Regulations for Ship Repairing

		8ECT	ION I			
MANUFACTURER'S NAME				EMERGENCY TELEPHONE NO.		
Coatings Engineering Corp			617-653-1500			
Appress (Number, Street, City, State, and ZIP C 33 Union Avenue, Sudbury	MA	017				
CHEMICAL NAME AND SYNONYMS		•	TRADE NAME AND SYNONYMS Cecoflex : 1108-22			
CHEMICAL FAMILY Plastisol	-		Preprietary		<del></del>	
			JA			
SECTION	1 H .	HAZAF	RDOUS INGREDIENTS			
Paints, Preservatives, & Solvents	*	TLV (Units)	ALLOYS AND METALLIC COATINGS	*	TLV (Units	
PIGMENTS			BASE METAL			
CATALYST	1		ALLOYS	_   _		
VEHICLE			METALLIC COATINGS			
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
ADDITIVES			OTHERS			
OTHERS						
HAZARDOUS MIXTURI	ES OF	DTHER LI	QUIDS, SOLIDS, OR GASES	×	TLV	
SE	CTIO	N 111 - 1	PHYSICAL DATA		<del></del>	
BOILING POINT (°F.)	13	> 565	SPECIFIC GRAVITY (H2O=1)	1		
					1.25	
VAPOR PRESSURE (mm Hg.)		Nil	PERCENT, VOLATILE BY VOLUME (%)		1.29 Nil	
VAPOR PRESSURE (mm Hg.) VAPOR DENSITY (AIR-1)	_	Nil NA				
			BY VOLUME (%) EVAPORATION RATE		Nil	
VAPOR DENSITY (AIR-1) SOLUBILITY IN WATER	cous	NA Nil	BY VOLUME (%) EVAPORATION RATE		Nil	
VAPOR DENSITY (AIR-1) SOLUBILITY IN WATER APPEARANCE AND ODOR Blue Vis	· FIR	NA Nil ligu	BY VOLUME (%) EVAPORATION RATE (=1)		Nil	
VAPOR DENSITY (AIR-1)  SOLUBILITY IN WATER  APPEARANCE AND ODOR Blue Vise  SECTION IV	· FIR	NA Nil ligu	evaporation rate (=1) idvery mild odor		Nil	
SOLUBILITY IN WATER  APPEARANCE AND GOOR Blue Visc  SECTION IV  FLASH POINT (Method wed) 305°F COC  EXTINGUISHING MEDIA FORM, CO2, dry chemicals	FIR	NA Nil liqui E AND	EVAPORATION RATE  (		Nil NA	
SOLUBILITY IN WATER  APPEARANCE AND GOOR Blue Vist  SECTION IV  FLASH POINT (Method wed) 305°F COC  EXTINGUISHING MEDIA FORM, CO2, dry chemicals	FIR	NA Nil liqui E AND	EVAPORATION RATE  (		Nil NA	
SOLUBILITY IN WATER  APPEARANCE AND GOOR Blue Visc  SECTION IV  FLASH POINT (Method wed) 305°F COC  EXTINGUISHING MEDIA FORM, CO2, dry chemicals	FIR  and  app	NA Nil liqui E AND	EVAPORATION RATE  (	у	Nil NA	

	Si	ECTION \	/ - HEA	LTH HAZARD I	DATA
THRESHOLD LIMIT	VALUE	ct not	volat	ile.	
EFFECTS OF OVERE If combustee	xPosuRE	e and	throat	irritation	may occurleave area.
EMERGENCY AND F	PST AID PROCEDI	rough1	y with	soap and	vater.
Eye contact	Wash eyes	with	copiou	s amounts o	of water.
Ingestion	material cl	assed	as non	-toxic.	
		SECTION	NVI. R	EACTIVITY DA	ATA 45
STABILITY		.,		NS TO AVOID	
	STABLE	<del>  </del>			
INCOMPATABILITY	• • • • • • • • • • • • • • • • • • • •	l XX l	<del></del> -		
Avoid contains	Ct of compo	ound wi	th ace	tal or amir	ne contained material duri
HCI, CO2, C			n comb	usted. I conditions to	
HAZARDOUS POLYMERIZATION	MAY OCCU	R			
	WILL NOT	OCCUR	XX		
waste disposal a Controlled a applicable	ETHOD incineration local, state	on with te, or	scruk	bers. Desi	igned landfill subject to
	SECTION	VIII · S	PECIAL	PROTECTION II	NFORMATION
despiratory pro	TECTION SPECIFY	Vidator	if c	combusted	
VENTILATION	AS require				SPECIAL
ı	MECHANICAL (G			<del></del>	OTHER
PROTECTIVE GLOV Oil resista	nt			EVE PROTECTION	onal eye cover
OTHER PROTECTIV	E EQUIPMENT			·	
;		ECTION	IX · SP	ECIAL PRECAU	TIONS
PRECAUTIONS TO				cagary, h	owever, in accordance with
good practi	ce, handle	with d	lue car	reavoid a	ny unnecessary personal
OTHER PRECAUTIO					cont
					TRW-00432

PAGE (2)



### TECHNICAL DATA

### CECOFLEX 1108 Series

The Cecoflex 1108 Series are plastisols which were developed to resist chemical and physical attack. They are applied by dipping the preheated metal parts into the plastisol at ambient temperature. These products are used in decorative coatings, hardware, tools, electrical insulators and many other industrial items.

Cecoflex 500A Primer is designed to develop excellent bond strength between the above plastisols and metallic substrates.

### Metal Preparation

Parts to be coated should be thoroughly cleaned. Poor cleaning can result in poor or no adhesion between metal and primer. Depending on the condition of the metal, cleaning could require degreasing only or degreasing, alkaline cleaning, rinsing, acid dip, rinsing and drying.

### CECOFLEX 500A Primer

### Material Specifications

Viscosity: 26

26± .2 seconds

#1 Zahn cup at 77±°F

Thinner:

Cecoflex TH5 for viscosity

and adjustment

Total Solids: 10.3±.1%

### Application of Primer

Prime with Cecoflex 500A. Dipping is preferred but spraying or brushing can be used. Viscosity range of primer as received is ideal for dipping or brushing. For spraying, the primer should be reduced to two parts primer and one part Cecoflex TH5 Thinner. Dry film thickness of primer should be .1 to .3 mil.

Air dry the applied primer for 10 to 20 minutes. Insufficient flash-off time may result in blistering during subsequent baking. Bake primer 5 to 20 minutes at 365° to 425°F.

NOTE: The temperatures above are oven temperatures and not metal temperatures. Immediately, while part is still hot, apply plastisol as described below.

### CECOFLEX 1108 Series

Tensile Strength psi. . . . . . . . 950±50

### Material Specifications

Elongation %	•	•	•	•	•	•	•	•	.450
Durometer Shore	A	•	•	•	•	•	•	•	.44±1
Weight/Gallon .	•	•	•	•	•	•	•	•	.9.80±.05
Viscosity cps .	•	•				•			.1500±500

Dielectric Strength v/mil . . . . 250±50

## **Coatings Engineering Corporation**

TRW-00433

33 UNION AVENUE SUDBURY, MASS. 01776 (617) 653-1500 00000

### Application of Cecoflex 1108 Series

Apply Cecoflex 1108 Series by dipping the hot metal part immediately into the Cecoflex 1108 at room temperature, and part should remain in the plastisol 15 seconds to 5 minutes. Withdrawal of part should be slow to avoid excess dripping. Bake coated part at 355° to 395°F from 5 to 20 minutes de-

....

pending on the mass of the object and coating thickness. Baking below 355°F does not completely fuse the film and baking above 395° will result in a degraded coating. In baking any plastisol, there must be a balanced time-temperature cycle for optimum results.

### For Industrial Use Only

Coatings Engineering Corporation gives no warranty, express or implied, and all products are sold upon condition that purchases will make their own tests to determine the quality and suitability of the product. Coatings Engineering Corporation shall be in no way responsible for the proper use and service of the product. Any information or suggestions given are without warranty of any kind and purchasers are solely responsible for any loss arising from the use of such information or suggestions. No information or suggestions given by us shall be deemed to be a recommendation to use any product in conflict with any existing patent rights.

TRW-00434

### IV HEALTH HAZARD DATA

### ROUTES OF EXPOSURE:

GRINDING CEMENTED CARBIDE PRODUCT WILL PRODUCE DUST OF POTENTIALLY HAZARDOUS INGREDIENTS WHICH CAN BE INHALED, SWALLOWED OR COME IN CONTACT WITH THE SKIN OR EYES.

### EFFECTS OF OVEREXPOSURE:

INHALATION

- DUST FROM GRINDING CAN CAUSE IRRITATION OF THE NOSE AND THROAT. IT ALSO HAS THE POTENTIAL FOR CAUSING TRANSIENT OR PERMANENT RESPIRATORY DISEASE, INCLUDING OCCUPATIONAL ASTHMA AND INTERSTITIAL FIBROSIS, IN A SMALL PERCENTAGE OF EXPOSED INDIVIDUALS. IT IS REPORTED THAT COBALT DUST IS THE MOST PROBABLE CAUSE OF SUCH RESPIRATORY DISEASES. SYMPTOMS INCLUDE PRODUCTIVE COUGH, WHEEZING, SHORTNESS OF BREATH, CHEST TIGHTNESS AND WEIGHT LOSS. INTERSTITIAL FIBROSIS (LUNG SCARRING) CAN LEAD TO PERMANENT DISABILITY OR DEATH. CERTAIN PULMONARY CONDITIONS MAY BE AGGRAVATED BY EXPOSURE.
- SKIN CONTACT CAN CAUSE AN IRRITATION OR SKIN RASH DUE TO COBALT SENSITIZATION.

  CERTAIN SKIN CONDITIONS, SUCH AS DRY SKIN, MAY BE AGGRAVATED

  BY EXPOSURE.
- EYE CONTACT CAN CAUSE IRRITATION.
- INGESTION REPORTS OUTSIDE THE INDUSTRY SUGGEST THAT INGESTION OF SIGNIFICANT AMOUNTS OF COBALT HAS THE POTENTIAL FOR CAUSING BLOOD, HEART AND OTHER ORGAN PROBLEMS.

### EMERGENCY AND FIRST AID PROCEDURES: APPLICABLE FOR DUSTS OR MISTS

INHALATION

- IF SYMPTONS OF PULMONARY INVOLVEMENT DEVELOP (COUGHING, WHEEZING, SHORTNESS OF BREATH, ETC.) REMOVE FROM EXPOSURE AND SEEK MEDICAL ATTENTION.
- SKIN CONTACT IF IRRITATION OR RASH OCCURS, THOROUGHLY WASH AFFECTED AREA WITH SOAP AND WATER AND ISOLATE FROM EXPOSURE. IF IRRITATION OR RASH PERSISTS, SEEK MEDICAL ATTENTION.
- EYE CONTACT IF IRRITATION OCCURS, FLUSH WITH COPIOUS AMOUNTS OF WATER. IF IRRITATION PERSISTS, SEEK MEDICAL ATTENTION.
- INGESTION IF SUBSTANTIAL QUANTITIES ARE SWALLOWED, DILUTE WITH A LARGE AMOUNT OF WATER, INDUCE VOMITING AND SEEK MEDICAL ATTENTION.

CARCINOGENIC ASSESSMENT (NTP ANNUAL REPORT, IARC MONOGRAPHS, OTHER):
NONE OF THE COMPONENTS OF THIS MATERIAL HAVE BEEN IDENTIFIED AS KNOWN OR SUSPECTED
CARCINOGENS BY NTP, IARC OR OSHA.

### I PRODUCTION IDENTIFICATION

DEVLIEG MICROBORE TOOLING SYSTEMS
DIVISION OF DEVLIEG MACHINE COMPANY

ADDRESS:

FAIR STREET

TELEPHONE NO. (313) 280-1100

ROYAL OAK, MICHIGAN 48068

CHEMICAL NAME:

CEMENTED TUNGSTEN CARBIDE WITH BINDERS

TRADE NAME AND

SYNONYMS:

ALL DEVLIEG CEMENTED TUNGSTEN AND TITANIUM CARBIDE PRODUCTS. ONE OR MORE OF THE MAJOR OR MINOR CARBIDE MANUFACTURERS MAY BE REPRESENTED UNDER THE DEVLIEG LABEL. SPECIFIC COMPOSITIONS AVAILABLE UPON REQUEST FROM THE MATERIAL MANUFACTURER OR THIS FABRICATOR.

CHEMICAL FAMILY:

REFRACTORY METAL CARBIDE

MOLECULAR WEIGHT:

N/A

II	PHY	SICAL	DATA

APPEARANCE AND ODOR:

DARK GRAY METAL/ NO ODOR

BOILING POINT:

N/A

SPECIFIC GRAVITY  $(H_20=1)$ : 5 TO 15.5

MELTING POINT:

N/A

PER CENT VOLATILE BY VOLUMN: 0

VAPOR PRESSURE (MM HG): VAPOR DENSITY (AIR=1): N/A

EVAPORATION RATE:

N/A

_____

N/A

HOW BEST MONITORED:

AIR SAMPLE

SOLUBILITY IN WATER:

INSOLUBLE

	III HAZARL	OUS INGREDIENTS	
MATERIAL	% BY WEIGHT	OSHA PEL	ACGIH TLV
CHROMIUM	0.0 - 5.1%	1.0 MG/M3	0.5 MG/M3
COBALT	0.0 - 30%	0.1 MG/M3	0.1 MG/M3
HAFNIUM	0.0 - 6%		======
MOLY BDENUM	0.0 - 50%	15.0 MG/M3	10.0
NICKEL	0.0 - 16%	1.0 MG/M3	1.0 MG/M3
NIOBIUM	0.0 - 15%	5.0 MG/M3	5.0 MG/M3
TANTALUM	0.0 - 50%	5.0 MG/M3	5.0 MG/M3
TITANIUM	0.0 - 14%		
TUNGSTEN	5.3 - 97%		5.0 MG/M3
VANADIUM	0.04%		.05 MG/M3

### V FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: N/A

TEST METHOD USED: --

FLAMMABLE LIMITS: N/A LEL:---

HET.

HARD CEMENTED CARBIDE PRODUCT IS NOT A FIRE HAZARD. DUSTS GENERATED IN GRIDING OPERATIONS MAY IGNITE IF ALLOWED TO ACCUMULATE AND SUBJECTED TO AN IGNITION SOURCE.

EXTINGUISHING MEDIA:

FOR POWDER FIRES, SMOTHER WITH DRY SAND, DRY DOLOMITE, ABC TYPE FIRE EXTINGUISHER, OR FLOOD WITH WATER.

### SPECIAL FIRE FIGHTING PROCEDURES:

FOR A POWDER FIRE CONFINED TO SMALL AREA, USE A RESPIRATOR APPROVED FOR TOXIC DUSTS AND FUMES. FOR A LARGE FIRE INVOLVING THIS MATERIAL, FIRE FIGHTERS SHOULD USE SELF-CONTAINED BREATHING APPARATUS.

### UNUSUAL FIRE AND EXPLOSION HAZARDS:

DUSTS MAY PRESENT A FIRE OR EXPLOSION HAZARD UNDER RARE FAVORING CONDITIONS OF PARTICLE SIZE, DISPERSION AND STRONG IGNITION SOURCE. HOWEVER, THIS IS NOT EXPECTED TO BE A PROBLEM UNDER NORMAL HANDLING CONDITIONS.

### VI REACTIVITY DATA

STABILITY:

UNSTABLE

CONDITIONS TO AVOID:

N/A

STABLE X

INCOMPATIBILITY:

CONTACT OF DUST WITH STRONG

MATERIALS TO AVOID:

STRONG ACIDS

OXIDIZERS MAY CAUSE FIRE

OR EXPLOSIONS -

HAZARDOUS DECOMPOSITON PRODUCTS:

NONE

HAZARDOUS POLYMERIZATION:

MAY OCCUR

CONDITIONS TO AVOID:

N/A

WILL NOT OCCUR X

### VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: VENTILATE AREA OF SPILL. CLEAN UP USING METHODS WHICH AVOID DUST GENERATION SUCH AS VACUUM (WITH APPROPRIATE FILTER TO PREVENT AIRBORNE DUST LEVELS WHICH EXCEED THE PEL OR TLV), WET DUST MOP OR WET CLEAN-UP. IF AIRBORNE DUST IS GENERATED, USE AN APPROPRIATE NIOSH APPROVED RESPIRATOR.

### WASTE DISPOSAL METHOD:

DISPOSE OF IN ACCORDIANCE WITH APPROPRIATE GOVERNMENT REGULATIONS. MAY BE SOLD AS SCRAP FOR RECLAIM.

### VIII SPECIAL PROTECTION INFORMATION (CONTINUED)

PERSONAL PROTECTIVE EQUIPMENT:

RESPIRATORY PROTECTION:

IF FUMES, MISTING OR DUST CONDITION OCCURS AND T.L.V. AS INDICATED IN SECTION II IS EXCEEDED, PROVIDE NIOSH APPROVED RESPIRATORS.

EYE PROTECTION:

RECOMMEND APPROVED SAFETY GLASSES OR GOGGLES

WHEN WORKING WITH DUSTY MATERIAL.

GLOVES:

AS REQUIRED

OTHER CLOTHING OR EQUIPMENT:

AS REQUIRED

### IX SPECIAL PRECAUTIONS

USE GOOD HOUSEKEEPING PRACTICES TO PREVENT ACCUMULATIONS OF DUSTS AND TO KEEP AIRBORNE DUST CONCENTRATION AT A MINIMUM.

THIS MATERIAL IS POTENTIALLY CONTAMINATED WITH COATINGS SUCH AS OILS FOR PRESERVATIVES AND OTHER CONTAMINANTS. IF THE MATERIAL IS CONTAMINATED, SPECIAL PRECAUTIONS (SUCH AS PROCESS CONTROL AND PERSONAL PROTECTIVE EQUIPMENT APPROPRIATE TO THE NATURE OF THE SUSPECTED CONTAMINANTS SHOULD BE TAKEN TO AVOID RESULTING EXPOSURES WHEN HANDLING, CUTTING (THERMAL OR MECHANICAL) AND/OR HEATING OR MELTING.

ALTHOUGH DEVLIEG MICROBORE TOOLING SYSTEMS DIVISION OF DEVLIEG MACHINE COMPANY HAS ATTEMPTED TO PROVIDE CURRENT AND ACCURATE INFORMATION HEREIN, DEVLIEG MICROBORE TOOLING SYSTEMS MAKES NO REPRESENTATIONS REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION AND ASSUMES NO LIABILITY FOR ANY LOSS, DAMAGE, INJURY OF ANY KIND WHICH MAY RESULT FROM OR ARISE OUT OF THE USE OF OR RELIANCE ON THE INFORMATION BY ANY PERSON.

IN CASE OF QUESTIONS PLEASE CALL:
DEVLIEG MICROBORE TOOLING SYSTEMS
DIVISION OF DEVLIEG MACHINE COMPANY
FAIR STREET
ROYAL OAK, MICHIGAN 48068
(313) 280-1100

ISSUE DATE:

SUPERSEDES: N/A

BY John G. John

TITLE Manager, Safety

E.F. HOUGHTON & CO. P. D. BOX 930 VALLEY FORGE, PA. 19482 * (215) 666-4105

MATERIAL SAFETY DATA SHEET

REV DATE: 080989

510100

CERFAK N-100

SECTION I-PRODUCT IDENTIFICATION

PRODUCT NAME: CERFAM N-100

PROPER SHIPPING NAME: CLEANING COMPOUND, LIQUID

HAZARD CLASS: NON-HAZARDOUS COMPLETED BY: ROBERT E. WILLIAMS

HAZARD ID NO: N/A

PHONE NUMBER: (215) 666-4105

-----

SPECIFIC GRAVITY: 0.98

SOL IN WATER: COMPLETE

CHEMICAL FAMILY: MIXTURE MFR. DUNS # : 00-226-1535

SECTION II-HAZARDOUS COMPONENTS

MATERIAL _____ ___ __

CAS NO % BY WT. HAZARD

DIETHANOLAMINE

111-42-2 10-30 TLV: 3 PPM

PEL: 3 PPM

(PRODUCT USE DILUTION IN WATER;

0.5~ 5.0%)

SECTION III-PHYSICAL DATA

BOIL. PT. (DEG F): N/A

VAPOR PRESSURE (MM HG) NIL

VAPOR DENSITY (AIR = 1) >1

PERCENT VOLATILE: NIL

EVAP RATE: N/A

**%**:

PH NEAT: N/A PH AT

APPEARANCE AND ODOR:

LIGHT REDDISH FLUID, FATTY ODOR

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT, DEG. F (METHOD USED): 350 C. O. C.

LEL: N/D UEL: N/D

NFPA CLASSIFICATION HEALTH: O FIRE: 1 REACTIVITY: O

EXTINGUISHING MEDIA:

CARBON DIOXIDE, FOAM, DRY CHEMICAL

SPECIAL FIRE FIGHTING INSTRUCTIONS:

NONE

UNUSUAL FIRE AND EXPLOSION HAZARDS:

NONE

CONTINUED ON PAGE 2

510100 CERFAK N-100 PAGE: 2

SECTION V - HEALTH HAZARD INFORMATION

THRESHOLD LIMIT VALUE: SEE SECTION 2

PERMISSIBLE EXPOSURE LIMIT: SEE SECTION 2

ROUTES OF EXPOSURE

CHRONIC (RECURRENT) EFFECTS: UNKNOWN FOR THIS PRODUCT.

ACUTE EFFECTS :

INHALATION:

AVDID BREATHING PRODUCT MISTS OR VAPORS, WHICH MAY CAUSE IRRITATION OF UPPER RESPIRATORY TRACT. PERSONS WITH CHRONIC RESPIRATORY DISEASE MAY SHOE INCREASED SYMPTOMS DUE TO IRRITATION.

SKIN:

MAY BE A MILD IRRITANT TO SKIN ON PROLONGED CONTACT.

EYE:

MILD IRRITANT

INGESTION:

NO SIGNIFICANT EFFECTS KNOWN

****** FIRST AID ******

INHALATION:

REMOVE TO SOURCE OF FRESH AIR

SKIN:

WASH OR FLUSH WITH WATER

EYE:

FLUSH WITH WATER 15 MINUTES; CONSULT PHYSICIAN IF IRRITATION PERSISTS

INGESTION:

INDUCE VOMITING; CONSULT PHYSICIAN. PRODUCT IS A FATTY ACID ALKANOLAMIDE SURFACTANT

*** MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE ***

NONE KNOWN

SECTION VI - REACTIVITY DATA

STABILITY: STABLE: [X] UNSTABLE: [ ]

INCOMPATABILITY (MATERIALS TO AVOID):

STRONG OXIDIZERS

HAZARDOUS DECOMPOSITION PRODUCTS:

THERMAL; OXIDES OF CARBON AND NITROGEN

HAZARDOUS POLYMERIZATION: MAY OCCUR: [ ] WILL NOT OCCUR: [X]

CONTINUED ON PAGE 3

510100 CERFAK N-100 PAGE: 3 SECTION VII - SPILL OR LEAK PROCEDURES POTENTIAL AS A POLLUTANT: NOT CONSIDERED A POLLUTANT. EFFECTIVE WASTE DISPOSAL METHODS SHOULD BE UTILIZED. MATERIAL IS BIODEGRADABLE. LEAK OR RELEASE: APPLY OIL ABSORBENT TYPE MATERIAL AND SWEEP UP. DILUTE ANY RESIDUE WITH WATER AND MOP UP THOROUGHLY TO AVOID ANY RESIDUAL SLIPPERINESS. WASTE DISPOSAL: DILUTE WITH WATER AND TRANSFER TO SEWAGE OR WASTE DISPOSAL SYSTEM WHICH PROVIDES BIOLOGICAL OXIDATION. NEAT PRODUCT MAY BE INCINERATED UNDER CONTROLLED CONDITIONS. SECTION VIII - SPECIAL PROTECTION INFORMATION RESPIRATORY PROTECTION: REQUIRED ONLY IF TLV FOR DIETHANOLAMINE IS EXCEEDED. VENTILATION: EXHAUST TYPE IF MISTING; OTHERWISE GENERAL TYPE IS SATISFACTORY. PROTECTIVE GLOVES: RUBBER IF SKIN IS SENSITIVE EYE PROTECTION: SAFETY GOGGLES IF SPLASHING THER PROTECTIVE EQUIPMENT: NOT REQUIRED SECTION IX - SPECIAL PRECAUTIONS STORAGE AND HANDLING CONDITIONS: AVOID CONTACT WITH STRONG OXIDIZERS ADDITIONAL PRODUCT INFORMATION CARCINOGENS AS DEFINED BY - NTP: NONE IARC: NONE OSHA: NONE. CERCLA REPORTABLE QUANTITY (LBS) : NONE RCRA HAZARDOUS WASTE NUMBER : N/A SARA TITLE III, SECTION 313 THIS PRODUCT CONTAINS NO TOXIC CHEMICAL SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND AUTHORIZATION ACT OF 1986 AND 40 CFR PART 372 OTHER THAN A MAXIMUM OF :

30% DIETHANOLAMINE (CAS 111-42-2)



Providence Chemicals Division
King Philip Road
Post Office Box 16069
East Providence, Rhode Island 02916
401-434-1770 Telex 92-7652

February 19, 1985

Ms. E. Giovennella TRW-Fasteners Division 31 Ames Street Cambridge, MA 02138

Dear Ms. Giovennella:

We have enclosed Material Safety Data Sheets on the Chem-O-Sol products you have purchased from Whittaker and/or Chemical Products in years past.

The materials are all dispersions of polyvinyl chloride resin in plasticizers and are generically known as vinyl plastisols.

We hope this information satisfies your needs. Should you require anything further, please do not hesitate to contact us.

Sincerely,

WHITTAKER

Prøyidence (

Chemic.

George E. LaRose Business Manager Industrial Products

GEL: js

Enclosures: R-8644 White Chem-O-Sol (MSDS)

R-8273 Clear Chem-O-Sol

X-9143 Gray Chem-O-Sol

AUG 19 1985 D. BORSUK

# U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

Form Approved QMB No. 44-R1387

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

		SECT	ION I			
MANUFACTURER'S NAME				EMERGENCY TELEPHONE	NO.	
Providence Chemicals Division,	Whi	ttaker	Corp.	(401) 434-1770		
ADDRESS (Number, Street, City, State, and ZIP C King Philip Road, East Provide	ode)	Rhiode	Island 02914			
CHEMICAL NAME AND SYNONYMS			TRADE NA	ME AND SYNONYMS Blue: Chem-0-Sol		
CHEMICAL FAMILY Vinyl Plastisol		. 4	FORMULA Proprie			
SECTION	V 11 -	HAZAF	RDOUS INGREDIE	NTS		
PAINTS, PRESERVATIVES, & SOLVENTS	*	TLV (Units)	ALLOYS AND M	ETALLIC COATINGS	*	TLV (Units)
PIGMENTS			BASE METAL	-		
CATALYST -			ALLOYS	-		
VEHICLE			METALLIC COATING	s(Not Applicable)		
SOLVENTS -			FILLER METAL PLUS COATING OR C	ORE FLUX		
ADDITIVES -			OTHERS	•		
OTHERS -						
HAZARDOUS MIXTURE	S OF	OTHER LI	QUIDS, SOLIDS, OR GA	SES	×	TLV (Units

	SECTION	ON III .	PHYSICAL DATA	
SOILING POINT (°F.)		N/A	SPECIFIC GRAVITY (H2O=1)	1.18
VAPOR PRESSURE (mm Hg.)		N/A	PERCENT, VOLATILE BY VOLUME (%)	Nil
VAPOR DENSITY (AIR+1)		N/A	EVAPORATION RATE	N/A
SOLUBILITY IN WATER		Nil		
APPEARANCE AND ODOR	Mild Odor,	. 1	blue Liquid	

CAS#7446142

FLASH POINT (Method used) 410°F. (C.O.C.)	FLAMMABLE LIMITS	Lei	Uei
EXTINGUISHING MEDIA CO2, Dry Chemical, For	am, Water Fog		
SPECIAL FIRE FIGHTING PROCEDURES  Do not use water jet as frothing may			

May release HCL and CO under extreme heat or when burned

Do not inhale smoke or fumes

Inorganic salt of Lead Sulfate

TRW-00443

 $0.05 \text{mg/M}^3$ 

As Pb

SECTION V - HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE
N/A EFFECTS OF OVEREXPOSURE
Eye & Skin Contact: - May cause reddening.
Ingestion: - May cause diarrhea. Contains salts of heavy metals.
EMERGENCY AND FIRST AID PROCEDURES Skin Contact: Wash with soap & water.
Eye Contact: Flush with water for 15 minutes, consult a physician.
Ingestion: Induce vomiting, consult a physician.

			SECII	ON VI - HI	EACTIVITY DATA	
STABILITY	UNS	TABLE		CONDITION	S TO AVOID	<del></del>
	STA	DLE	ж			
HAZARDOUS D	·		Strong		ng agents (Acids)	
			HCl,	co, co ₂		
HAZARDOUS POLYMERIZATION WILL NOT OCCU		CUR		CONDITIONS TO AVOID		
		T OCCUR	×			

SECTION VII - SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Cover with absorbent material and collect in a suitable container.
WASTE DISPOSAL METHOD
Burial in an approved landfill, or controlled incineration. In
accordance with current regulations.

	SECTION VIII - SPEC	CIAL PROTECTIO	ON INFORMATION	
RESPIRATORY PI	ROTECTION (Specify type)			
VENTILATION	During fusing		SPECIAL	
	MECHANICAL (General) During fusing	•	OTHER	
PROTECTIVE GLOVES  Recommended		EYE PROTE	ECTION Recommended	•
OTHER PROTECT				

TRW-00444

SECTION IX - SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store away from direct sunlight & other heat sources. Avoid contact with skin,
wash thoroughly after handling. Contains salts of heavy metals.
OTHER PRECAUTIONS Do not inhale fumes given off during fusing, Exhaust fusing ovens & provide
adequate ventilation.

While the information & recommendations set forth herein are believed to be accurate as of the date hereof, Providence Chemicals Div. makes no warranty with respect thereto and disclaims all liability from reliance thereon.

MATERIAL SAFETY DATA SHEET NPCA 1-84 FOR PLASTISOLS, URETHANES AND RELATED MATERIALS PAGE 1 OF 4

HMIS RATING HEALTH (1) FLAMMABILITY (1) REACTIVITY (0) PERSONAL (G)

MORTON INTERNATIONAL / INDUSTRIAL COATINGS KING PHILIP ROAD EAST PROVIDENCE, RI 02916

DATE 4/27/90

PHONE NO 401-434-1770

EMERGENCY NO. CALL CHEMTREC. 800-424-9300

### SECTION I - PRODUCT IDENTIFICATION

TRADE NO & NAME D4497 BLUE CHEM-O-SOL

### SECTION II - HAZARDOUS INGREDIENTS

#	DESCRIPTION	CAS	NO	PERCENT BY WEIGHT	ACGIH	TWA * OSHA PEL	LEL	VAPOR PRESSURE mmHg@20C
				PERCENT BY SOLIDS	ACGIH			

### 1 LEAD COMPOUND(S)

2.162 .15 .05

### SECTION III - PHYSICAL DATA

BOILING RANGE N/A DEG F
% VOLATILE BY VOLUME NIL
WEIGHT PER GALLON 9.81

VAPOR DENSITY - NOT APPLICABLE EVAPORATION RATE - NOT APPLICABLE

### SECTION IV - FIRE AND EXPLOSION HAZARD DATA

DOT CATEGORY NON-HAZARDOUS FLASH POINT >390 DEG F PMCC LEL N/A

EXTINGUISHING MEDIA Use National Fire Protection Association (NFPA) Class B extinguisher carbon dioxide, dry chemical or foam designed to extinguish NFPA Class I B flammable liquid fires

UNUSUAL FIRE AND EXPLOSION HAZARDS Keep containers tightly closed. Isolate from heat.

SPECIAL FIRE FIGHTING PROCEDURES Water spray may be ineffective. Water may be used to cool closed containers to prevent pressure build up and possible autoignition or explosion when exposed to extreme heat. If water is used, fog nozzles are preferable.

### ** CONTINUED **

MATERIAL SAFETY DATA SHEET NPCA 1-84 PAGE 2 OF

<del>__ \</del>____.

MORTON INTERNATIONAL / INDUSTRIAL COATINGS TRADE NO & NAME D4497 BLUE CHEM-O-SOL

DATE 4, /9

### SECTION V - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE Inhalation: Anesthetic. Irritation of the respiratory tract or acute nervous system, depression characterized by headache, dizziness, staggering gait, confusion, unconsciousness or coma Skin or Eye Contact: Primary irritation.

EMERGENCY AND FIRST AID PROCEDURES Fumes: Remove from exposure. Restore breathing. Keep warm and quiet. Notify a physician. Splash (eyes): Flush immediately with copious quantities of running water for at least 15 minutes. Take to a physician for a definitive medical treatment. Splash (skin): remove with soap and water. Remove contaminated clothing.

NOTES: The items listed in SECTION II are believed to have the following health effects (See SEC X for explanation)

1:8b,c,d,f;9

### SECTION VI -- REACTIVITY DATA

STABILITY Stable

HAZARDOUS DECOMPOSITION PRODUCTS May produce hazardous fumes when heated to decomposition as in welding. Fumes may contain carbon monoxide and HCl, as well as oxides of any heavy metals listed in Section II.

HAZARDOUS POLYMERIZATION Will not occur

CONDITIONS TO AVOID Not applicable

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL RELEASED OR SPILLED Ventilate area. Remove with inert absorbent.

WASTE DISPOSAL METHOD Dispose of in accordance with local, state and federal regulations.

** CONTINUED **

MORTON INTERNATIONAL / INDUSTRIAL COATINGS TRADE NO & NAME D4497 BLUE CHEM-O-SOL

DATE 4/27/90

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION In outdoor or open areas use Bureau of Mines approved mechanical filter respirator to remove solid air borne particles of overspray during spray application. In restricted ventilation areas use Bureau of Mines approved chemical-mechanical filters designed to remove a combination of particulate and gas and vapor. In confined areas use Bureau of Mines approved air line type respirators or hoods.

VENTILATION Provide general dilution or local exhaust ventilation during spray and/or fusing in volume and pattern to keep TLV of most hazardous ingredient in Section II below acceptable limit, LEL in Section II below stated limit, and to remove decomposition product welding or flame cutting on surfaces coated with this product.

PROTECTIVE GLOVES Required for prolonged or repeated contact.

EYE PROTECTION Use safety eyewear designed to protect against splash of liquids.

OTHER PROTECTIVE EQUIPMENT Prevent prolonged skin contact with contaminated clothing.

### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Do not store above 120 deg F.

OTHER PRECAUTIONS Do not take internally. Avoid free fall of liquid in excess of a few inches. Do not flame cut, braze, or weld without U.S. Bureau of Mines approved respirator or appropriate ventilation.

** CONTINUED **

MORTON INTERNATIONAL / INDUSTRIAL COATINGS
TRADE NO & NAME D4497 BLUE CHEM-O-SOL

DATE 4, /90

### SECTION X SPECIFIC HEALTH HAZARD INFORMATION (SEE SECTION V)

- 8 Repeat exposure may result in damage to or abnormalities of the following: a) liver, b) kidneys, c) brain or nervous system, d) blood, e) lungs, f) reproductive organs, g) skin, h) eyes.
- 9 Repeat exposure may cause fetal death or birth defects.

### SECTION XI - SUPPLIER NOTIFICATION

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372. If you are unsure if you must report or require more information, call the EPA Emergency Planning and Community Right-To-Know Hotline: (800) 535-0202 or (202) 479-2449 (in Washington DC or Alaska).

CHEMICAL N	IAME	CAS NO	% BY	WEIGHT
LEAD COMPOUN	ID(S)			2.16

2.16

TRW-00448

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# U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

Form Approved OMB No. 44-R1387

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I	
MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
Providence Chemicals Division, Whittaker Corp.	(401) 434-1770
ADDRESS (Number, Street, City, State, and ZIP Code) King Philip Road, East Providence, Rhode Island	02914
	R-8644 White Foam Chem-O-Sol
CHEMICAL FAMILY Vinyl Plastisol	Proprietary

PAINTS, PRI	RESERVATIVES, & SOLVENTS % TLV (Units) ALLOYS AND METALLIC COATINGS		*	TLV (Units)		
PIGMENTS				BASE METAL -		
CATALYST	-			ALLOYS -		
VEHICLE	-			METALLIC COATINGS (Not Applicable)		
SOLVENTS	-			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES	-			OTHERS -		
OTHERS	-					
	HAZARDOUS MIXTURE	8 OF (	OTHER LI	QUIDS, SOLIDS, OR GASES	*	TLV (Units)
Inorgan	ic salts of lead			less than	2	
	<del></del>				1	

	SECTION III -	PHYSICAL DATA	
BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H20=1)	1.20
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	Nil
VAPOR DENSITY (AIR+1)	N/A	EVAPORATION RATE	N/A
SOLUBILITY IN WATER	Nil		
APPEARANCE AND ODOR MILD	Odor, .	White Liquid	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA					
FLASH POINT (Method used) 410°F. (C.O.C.)	FLAMMABLE LIMITS	Let	Uel		
EXTINGUISHING MEDIA CO2, Dry Chemical, Foam,	Water Fog				
SPECIAL FIRE FIGHTING PROCEDURES  Do not use water jet as frothing may p					
UNUSUAL FIRE AND EXPLOSION HAZARDS	nat or when burned.				

Do not inhale smoke or fumes.

TRW-00449

SECTION V - HEALTH HAZARD DATA	
THRESHOLD LIMIT VALUE  N/A  EFFECTS OF OVEREXPOSURE	
Eye & Skin Contact: - May cause reddening.	
Ingestion: - May cause diarrhea. Contains salts of heavy metals.	
EMERGENCY AND FIRST AID PROCEDURES Skin Contact: Wash with soap & water.	
Eye Contact: Flush with water for 15 minutes, consult a physician.	
Ingestion: Induce vomiting, consult a physician.	

			SECTI	ON VI - R	EACTIVITY DATA			
STABILITY	UN	UNSTABLE		CONDITION	CONDITIONS TO AVOID			
	STA	STABLE X						
HAZARDOUS C	<u> </u>	·	Stron		ng agents (Acids)			
		<del></del>	HC1	co, co ₂	CONDITIONS TO AVOID			
POLYMERIZATION		MAY OCC	UR		CONDITIONS TO AVOID			
		WILL NOT OCCUR		х				

SECTION VII - SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Cover with absorbent material and collect in a suitable container.
WASTE DISPOSAL METHOD
Burial in an approved landfill, or controlled incineration. In
accordance with current regulations.

	SECTION VIII - SPEC	CIAL PROTECTION	INFORMATION		
RESPIRATORY PI	ROTECTION (Specify type)	<del></del>			
VENTILATION	LOCAL EXHAUST During fusing		SPECIAL		
	MECHANICAL (General) During fusing		OTHER		
PROTECTIVE GLOVES Recommended		EYE PROTECTI	EYE PROTECTION Recommended		
OTHER PROTECT					

SECTION IX - SPECIAL PRECAUTIONS						
PRECAUTIONS Store away	TO BE TAKEN IN HANDLING AND STORING from direct sunlight & other heat sources. Avoid contact with skin,					
	ughly after handling. Contains salts of heavy metals.					
OTHER PRECA	OUTIONS ale fumes given off during fusing. Exhaust fusing ovens & provide					
	entilation.					

PAGE (2)

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While the information & recommendations set forth herein are believed to be accurate as of the date hereof, Providence Chemicals Div. makes no warranty with respect thereto and disclaims all liability from reliance thereon.

2/18/85

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TRW Fasteners Dick Norcross

U.S. DEPARTMENT OF LABOR

Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

Shipbuilding, i	and Si	nipbreaking	(29 CFR 1915, 19	16, 1917)				
		SECT	ON I			·		
MANUFACTURER'S NAME Providence Chemicals Division, Whittaker Corporation (401) 434-17								
ADDRESS (Number, Street, City, State, and ZIP Co King Philip Road, East Provide CHEMICAL NAME AND SYNONYMS		Rhode	Island 02916	AME AND SYNC	DNYMS	501		
CHEMICAL FAMILY Vinyl Plastisol	FORMULA Proprietary							
SECTION	111 -	HAZAR	DOUS INGREDI	ENTS				
PAINTS, PRESERVATIVES, & SOLVENTS	*	TLV (Units)	ALLOYS AND	METALLIC COA	TINGS	×	TLV (Units)	
PIGMENTS			BASE METAL					
CATALYST			ALLOYS					
VEHICLE			METALLIC COATINGS					
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX					
ADDITIVES			OTHERS					
OTHERS								
HAZARDOUS MIXTURE	18 OF	OTHER LIC	UIDS, SOLIDS, OR G	ASES		*	(INNER)	
Phenolic Resin as Phenol 108 95 2 4 0.  as formaldehyde 50-00-0 4 0.								
Di-2-ethyl hexyl phthalate CAS#117-81-7							5mg/M	
Calcium Oxide CAS#13505-78-8	3				4	3	5mg/M	
						•		
			· .					
SE	CTIO	N 111 - F	HYSICAL DATA	\				
BOILING POINT (FF.)	SPECIFIC GRAVITY (H20-1)				1.25			
VAPOR PRESSURE (mm Hp.)		N/A	PERCENT, VOLATILE BY VOLUME (%)				N11	
VAPOR DENSITY (AIR-1) N/A			EVAPORATION RATE				N/A	
SOLUBILITY IN WATER .		Nil						
APPEARANCE AND ODOR Bla	ıck	Liquid	- Mild Odo	<b>r</b>				
SECTION IV	FIR	E AND	XPLOSION HAZ	ARD DATA				
FLASH POINT (Mothed used) Above	200	°F.	FLAMMABLE LI	MITS	٢	4	Uel	
EXTINGUISHING MEDIA CO2,	Dry	Chemica	l, Foam, Water	Fog				
		e water	jet as frothi	ng may pro	mote	flame		
BPTEAN UNUSUAL FIRE AND EXPLOSION MAZAROS			and CO	*****		when		
may reburne			a <u>nd CO under e</u> inhale <mark>smoke</mark> o		LL_QK	HILL		

<u> </u>	<u> </u>	ECTION	/ LIEA	LTH HAZARD [	NATA	<del></del>
THRESHOLD LIMIT	VALUE			LIN HAZAKU L	PATA	
	See	Section	II			
Ingestion c	auses gastroi	ntestina	repeat l irrit	ed contact ma ation, vomiti	y cause skin irritang or depression.	ation.
EMERGENCY AND with plenty	FIRST AID PROCEDU	RES In c	ase of	contact, imme	diately flush eyes emoving contaminat	or skin
clothing &	shoes. Get me	dical at	tention	. Wash clothi	ng before reuse. The	horoughly
clean contai glasses of wa	minated shoes ter & sticking person. Get n	If swa g finger	llowed,	induce vomit hroat. Never	ing immediately by	giving 2 outh to an
unconscious	person. Get 1			EACTIVITY DA	TA	
STABILITY	UNSTABLE	<del>,</del>		IS TO AVOID		
	STABLE	x	Не	at sources, U	T. Idahe	
Strong oxid	(Materials to avoid)	<u></u>		0001000, 0	D DIKIT	
HAZARDOUS DECO	MPOSITION PRODU	CTS				
HAZARDOUS	MAY OCCU	₹		CONDITIONS TO	AVOID	
POLYMERIZATION	WILL NOT	OCCUR	×			
<del></del>						
				OR LEAK PROC	EDURES	
In case of	EN IN CASE MATERI Spillage, abso	al is rele orb with	inert i	MATERIAL AND	dispose of in accor	rdance
with applica	able regulation	ons.				
				-		
WASTE DISPOSAL DISPOSE in	METHOD Accordance wit	h State	Local	, Federal Reg	ulations.	
	-				*	
	· · · · · · · · · · · · · · · · · · ·		a			
				ROTECTION IN		
RESPIRATORY PRO	otection (Specify t) ation exceeds	TLV. us	e approv	ved respirato	r.	
VENTILATION	Bhould be pro	Adequa vided t	te vent	ilation below TLV.	SPECIAL	
	MECHANICAL /Ge should be pro	<i>merel)</i> Ade	quate v	entilation	OTHER	
PROTECTIVE GLOV		7 TOEG	O. KEED.	EVE PROTECTION		
OTHER PROTECTI	VE EQUIPMENT	ine & e	afaty el		he available in th	
vicinity of			arery a	WIETA SHITT		
	S	ECTION	IX - SPE	CIAL PRECAUT	rions	
PRECAUTIONS TO Store away	BE TAKEN IN HANG From heat sout	ces and	storing direct	sunlight.		
	ner closed whe	en not i	n use.			
OTHER PRECAUTI Product cont clothing be	tains salts of	heavy	metals.	Harmful if	swallowed. Launder	contaminate
PAGE (2) beli	le the information leved to be accurate to be accurate to the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second sec	curate '	as of th	ne date hereo:		Form OSHA-20 Rev. May 72

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disclaims all liability from reliance thereon.

TRW-00452

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# U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

Form Approved OMB No. 44-R1387

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I						
MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.					
Providence Chemicals Division, Whittaker Co	orp. (401) 434-1770					
ADDRESS (Number, Street, City, State, and ZIP Code) King Philip Road, East Providence, Rhode Is	land 02914					
CHEMICAL NAME AND SYNONYMS	R-8273 Clear Chem-0-Sol					
CHEMICAL FAMILY Vinyl Plastisol	Proprietary					

PAINTS, PRESERVATIVES, & SOLVENTS		TLV (Units)	ALLOYS AND METALLIC COATINGS		×	TLV (Units)
PIGMENTS			BASE METAL	<u>-</u>		
CATALYST -			ALLOYS	-		
VEHICLE			METALLIC COATING	(Not Applicable)		
SOLVENTS -			FILLER METAL PLUS COATING OR C	ORE FLUX		
ADDITIVES -			OTHERS	-		
OTHERS -						
HAZARDOUS MIXTURE	8 OF (	OTHER LIC	QUIDS, SOLIDS, OR GA	SES .	*	TLV (Units
Organic Salts of Barium, Cad	lmium	and Z	inc	less than	2	

	SECTION III -	PHYSICAL DATA	
BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H2O=1)	1.07
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	Ni1
VAPOR DENSITY (AIR+1)	N/A	EVAPORATION RATE	N/A
SOLUBILITY IN WATER	Nil		
APPEARANCE AND ODOR MILD	Odor, 0	paque Liquid	

FLASH POINT (Method used) 410°F. (C.O.C.)	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA CO2, Dry Chemical, Fo	am, Water Fog		
SPECIAL FIRE FIGHTING PROCEDURES  Do not use water jet as frothing may			

May release HCL and CO under extreme heat or when burned.

- TRW-00453

SECTION V - HEALTH HAZARD DATA				
THRESHOLD LIMIT VALUE				
N/A  EFFECTS OF OVEREXPOSURE  Eye & Skin Contact: - May cause reddening.				
Ingestion: - May cause diarrhea. Contains salts of heavy metals.				
EMERGENCY AND FIRST AID PROCEDURES Skin Contact: Wash with soap & water.				
Eye Contact: Flush with water for 15 minutes, consult a physician.				
Ingestion: Induce vomiting, consult a physician.				

			SECTI	ON VI - RI	EACTIVITY DATA		
STABILITY	UNS	INSTABLE		CONDITION	CONDITIONS TO AVOID		
	STA	BLE	х				
INCOMPATABIL	ITY (Mate	rials to avoid)	Stron	g oxidizir	ng agents (Acids)	<del></del>	
HAZARDOUS D	ECOMPOS	ITION PROD	JCTS	CO, CO ₂			
HAZARDOUS		MAY OCCL			CONDITIONS TO AVOID		
POLYMERIZAT	ON	WILL NOT	OCCUR	х			

SECTION VII - SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Cover with absorbent material and collect in a suitable container.	
WASTE DISPOSAL METHOD	
Burial in an approved landfill, or controlled incineration. In	
accordance with current regulations.	

	SECTION VIII - SPEC	CIAL PROTECTION I	NFORMATION
RESPIRATORY PRO	STECTION (Specify type)		
VENTILATION	LOCAL EXHAUST During fusing	·	SPECIAL
	MECHANICAL (General) During fusing	•	OTHER
PROTECTIVE GLOVES		EYE PROTECTION	
Recommended:			Recommended

SECTION IX - SPECIAL PRECAUTIONS				
PRECAUTIONS TO BE	TAKEN IN HANDLING AND STORING direct sunlight & other heat sources. Avoid contact with skin,			
wash thoroughly	after handling. Contains salts of heavy metals.			
OTHER PRECAUTION	s umes given off during fusing, Exhaust fusing ovens & provide			
adequate venti:				

PAGE (2)

SPO 8 30.340

While the information & recommendations set forth herein are believed to be accurate as of the date hereof, Providence Rev. May 72

Chemicals Div. makes no warranty with respect thereto and disclaims all liability from reliance thereon. 2/18/85

## RECEIVED

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved OMB No. 44-R1387

JUN 02 1986

# MATERIAL SAFETY DATA SHEET

## D. F. BORSUK

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I				
MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.			
Providence Chemicals Division, Whittaker Corporation	(401) 434–1770			
ADDRESS (Number, Street, City, State, and ZIP Code) King Philip Road, East Providence, Rhode Island 02916				
CHEMICAL NAME AND SYNONYMS TRADE	NAME AND SYNONYMS 6 Gray Chem-0-Sol			
CHEMICAL FAMILY Vinyl Plastisol Pro	prietary			

PAINTS, PRESERVATIVES, & SOLVENTS	*	TLV (Units)	ALLOYS AND METALLIC COATINGS	×	TLV (Units)
PIGMENTS		<u> </u>	BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURE	E8 OF (	OTHER LI	QUIDS, SOLIDS, OR GASES	*	TLV (Units)
Salts of Lead Sulfate CAS# 120	2-17	-4	as Pb ≺	1.8	0.05m

	SECTION III -	PHYSICAL DATA	
BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H2O-1)	1.17
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	N11
YAPOR DENSITY (AIR-1)	N/A	EVAPORATION RATE	N/A
SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR Gray Liquid - Mild Odor

FLASH POINT (Method used)	Above 200°F.	FLAMMABLE LIMITS	Let	Uel
EXTINGUISHING MEDIA		1, Foam, Water Fog		
SPECIAL FIRE FIGHTING PROC	EDURES  Do not use water	jet as frothing may pr	omote fla	lm <b>e</b>
-	spread.			
UNUSUAL FIRE AND EXPLOSIO	M HAZAROS	and CO under extreme he	at or whe	:n

SECTION V - HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE See Section II
Depending on long-term exposure, symptons of lead susceptibility intlude
tiredness, decreased appetite, stomach cramps etc
EMERGENCY AND FIRST AID PROCEDURES: If swallowed, induce vomiting immediately by giving two glasses of water & sticking finger down the throat. Never give anything by
mouth to an unconscious person. Get medical attention. In case of contact,
immediately flush eyes and skin with water for 15 minutes.

SECTION VI - REACTIVITY DATA						
STABILITY	UNSTABLE		CONDITIO	CONDITIONS TO AVOID		
	STABLE	х	Неа	t and UV light		
HAZARDOUS DE	dizing agent ECOMPOSITION P	RODUCTS	<del></del>			
HAZARDOUS DE	COMPOSITION P	RODUCTS	·	CONDITIONS TO AVOID		
HAZARDOUS	1	MAY OCCUR		CONDITIONS TO AVOID		
POLYMERIZATION		WILL NOT OCCUR		-		

SECTION VII - SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Cover with inert material and dispose of in accordance with applicable
regulations.
•
Dispose in accordance with State, Local Federal Regulations.

	SECTION VIII - SPECIAL PI	ROTECTION INFORMATION
RESPIRATORY PR Respirator r	OTECTION (Specify type) ecommended if TLV is exceed	ed.
VENTILATION LOCAL EXHAUST Adequate ventilation shou		SPECIAL
	MECHANICAL (General) ensured to keep below TLV.	OTHER
PROTECTIVE GLOVES. Recommended		EVE PROTECTION Use of goggles recommended.
Emergency ey vicinity of	e wash fountains & safety sho	wers should be available in the

Emergency eye wash fountains & safety showers should be available in the vicinity of work place.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store away from heat sources and direct sunlight.

OTHER PRECAUTIONS

Do not use on toys, furniture or surface of other articles which might be chewed by children. Wash hands thoroughly after using & before smoking or eating.

While the information & recommendations set forth herein are believed to be accurate as of the date hereof, Providence

GPO 930.340 Chemicals Div. makes no warranty with respect thereto & disclaims all liability from reliance thereon.

5-29-86

* 3/37/85 Barrick

# U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

Form Approved OMB No. 44-R1387

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I						
MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.					
Providence Chemicals Division, Whittaker Corp.	(401) 434-1770					
ADDRESS (Number, Street, City, State, and ZIP Code) King Philip Road, East Providence, Rhode Island	02914					
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS X-9143 Gray Chem-0-So1					
CHEMICAL FAMILY Vinyl Plastisol	A Proprietary					

PAINTS, PRESERVATIVES, & SOLVENTS % TLV (Units) ALLOYS AND METALLIC COATINGS				*	TLV (Units)	
PIGMENTS				BASE METAL -		
CATALYST	-			ALLOYS -		
VEHICLE	-			METALLIC COATINGS (Not Applicable)		
SOLVENTS	-			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES	_			OTHERS -		
OTHERS	-	1				
	HAZARDOUS MIXTURE	<b>S</b> OF (	OTHER LI	QUIDS, SOLIDS, OR GASES	×	TLV (Units
Inorgani	ic salts of lead			less than	2	

	SECTION III .	PHYSICAL DATA		
BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H20=1)	1.18	
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	Nil	
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE	N/A	
SOLUBILITY IN WATER	Nil			
APPEARANCE AND ODOR Mild	Odor,	Gray Liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA						
FLASH POINT (Method used) 410°F. (C.O.C.)	FLAMMABLE LIMITS	Lel	Uet			
EXTINGUISHING MEDIA CO2, Dry Chemical, Foam, V	Nater Fog					
SPECIAL FIRE FIGHTING PROCEDURES  Do not use water jet as frothing may pro						

UNUSUAL FIRE AND EXPLOSION HAZARDS

May release HCL and CO under extreme heat or when burned.

Do not inhale smoke or fumes.

# SECTION V · HEALTH HAZARD DATA THRESHOLD LIMIT VALUE N/A EFFECTS OF OVEREXPOSURE Eye & Skin Contact: - May cause reddening. Ingestion: - May cause diarrhea. Contains salts of heavy metals. EMERGENCY AND FIRST AID PROCEDURES Skin Contact: Wash with soap & water. Eye Contact: Flush with water for 15 minutes, consult a physician. Ingestion: Induce vomiting, consult a physician.

			SECTI	ON VI - RI	EACTIVITY DATA	
STABILITY	UNS	INSTABLE		CONDITIONS TO AVOID		
	STA	BLE	×			
INCOMPATABIL	ITY (Mate	rials to avoid	Stron	g oxidizir	ng agents (Acids)	
HAZARDOUS D	ECOMPOS	ITION PROD		co, co ₂		
HAZARDOUS MAY OCC		UR		CONDITIONS TO AVOID		
POLYMERIZATION	ION	WILL NOT	WILL NOT OCCUR			

SECTION VII - SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Cover with absorbent material and collect in a suitable container.	_
WASTE DISPOSAL METHOD	
Burial in an approved landfill, or controlled incineration. In	
accordance with current regulations.	

	SECTION VIII - SPEC	CIAL PROTECT	ON INFORMATION	
RESPIRATORY P	ROTECTION (Specify type)			
VENTILATION	LOCAL EXHAUST During fusing		SPECIAL	
	MECHANICAL (General) During fusing		OTHER	
PROTECTIVE GLOVES  Recommended		EYE PRO	Recommended	
OTHER PROTECT				

SECTION IX - SPECIAL PRECAUTIONS								
PRECAI Store	UTIONS TO BE TAKEN IN HANDLING AND STORING away from direct sunlight & other heat sources. Avoid contact with skin,							
	choroughly after handling. Contains salts of heavy metals.							
OTHER	PRECAUTIONS inhale fumes given off during fusing. Exhaust fusing ovens & provide							
	ate ventilation.							

PAGE (2)	While the information & recommendations believed to be accurate as of the date he Chemicals Div. makes no warranty with re-	horoof Providence	Form OSHA-20 Rev. May 72 aims
	all liability from reliance thereon.	2/18/85	770 III. 00 44

# MATERIAL SAFETY DATA SHEET PARHENNILA 6-70

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-00S-4)

			Sect	ion I			
MANUFACTURER'S NAME							
Neville Chemical Com	pany					·	
STHEET ADDRESS   eville Island				· · · · · · · · · · · · · · · · · · ·			
CITY, STATE, AND ZIP CODE Pittsburgh, Pennsylv	ania 15225	5					
EMERGENCY TELEPHONE NO.	,						
Area 412-331-4200 CHEMICAL NAME AND SYNONYMS	<del></del>			TRADE NAME	277 2 - 1	1 /	1
CHLORINATED PARAFFIN	WAX			UNICHLOR 40	ARAFIN	100	4X
Chlorinated Hydrocar	`oon			c ₂₂ H ₄₀ Cl ₆			
<u> </u>	Surilo:	C .	3.00	STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE	Topic or all the second	<del>-4</del>	
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CATALYST	1			ADDITIVES			ļ
			<u> </u>		<del></del>		
VEHICLE	1			OTHERS			
		·					
~ HAZAR	DOUS MIXTURES	OF C	THER LIQU	HDS, SOLIDS, OR GASES		%	(Units)
Literature reference	s indicate 4	0%	Chlorina	ated Paraffin to be "non a	toxic"		
	<b>13</b> 3	ī, c	11 5		Tariffe A asserting a line	<u></u>	
BOILING POINT (*F.)	T STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STA	41.5		SPECIFIC GRAVITY (H.O=1)	<del></del>		
VAPOR PRESSURE (mm Hg.)	NONE			PERCENT VOLATILE	1.19 @ 25	° C.	
	NA NA			PERCENT VOLATILE BY VOLUME (%) EVAPORATION RATE	essential	ly 10	<u>0% 525-</u>
VAPOR DENSITY (AIR=1)	NA			(=1)	NA		
SOLUBILITY IN WATER	Negligi	ble		<pre>cVolatility</pre>	2.8x10 ⁶ gr	ems/s	quare
APPEARANCE AND XXXXX	Clear Straw	Co	lor Liq		centimete	r/hou	r (10)
ODOR	Typical - M		-	· <u>-</u>			
FLASH POINT (METHOD USED)		44:-	ger Fachage Byg ( ) pro-	FLAMMABLE LIMITS	Lei	1	<u> </u>
None-(Cleveland Open	-		<del></del>	`	<u> </u>	<u>-!</u>	
Material is used in special fire Fighting PROCEDURES	firc_retarda	nt_	compound	ls			
	<del></del>		·				
MANAGEMENT FIRE AND EVEN ACCOUNT.			- <del></del>		TRW-	<u> </u>	9
UNUSUAL FIRE AND EXPLOSION HAZARDS				0908-1825	T IV 44 = /	JU7J	

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THRESHOLD LIMIT VALUE		فتك للمنائدة في	the second		N. J. Ch., Seller, the Object and Excellent Science.	Name and the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state
T. SEXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	N.A.					
Ingestion - Mater Eye Contact - Flo	rial is believed	suffic	ciently	inert to a	llow time for phy	vsician or hospital treatment.
EMERGENCY AND FIRST AID		ysiciai	· <del>• · · · · · · · · · · · · · · · · · ·</del>			
Skin contact - F		olvent	and/or	soap and w	ater	
	·	<del></del>		<del></del>	· —	
					<u> </u>	
	Total control of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of t	250,200				
			•		All the second	
STABILITY	UNSTABLE	<u> </u>	CONDI	TIONS TO AVOID	220C	
	STABLE	Y	Temp	enstune abo		stended time periods.
INCOMPATABILITY (Materials	to avoid)				101 01 01	recined time periods.
HAZARDOUS DECOMPOSITION				- 4+ 1750	0 5 5	our period 0.25% H Cl
	evolved at high	1 rempe	ralure	S. AT 175*	. C. for a four no	ur period U.Z5% H Cl
is generated.	MAY OCCUR	1		CONDITIONS	O AVOID	
_HAZARDOUS POLYMERIZATION	WILL NOT OCCUR			<del>-</del>		
	Times not occorr	i	X	<del></del>		
S. JO BE TAKEN IN CASE	· · · · · · · · · · · · · · · · · · ·	•	ii <b>4.2</b> ii i			
Material should !	be cleaned up wit	th milc	l solver	nt and/or d	etergent wash.	
WASTE DISPOSAL METHOD			<del></del>	· · · · · · · · · · · · · · · · · · ·		
Generally in the	manner of petro	laim Da	oodusts	•		<del></del>
ocherally in the	marrier of pecro.	ream bi	. oducts	•		
	· · · · · · · · · · · · · · · · · · ·	<del></del>				**************************************
	A CHO THE	133		alian Enire de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la caractería de la carac	A Commence of the second	
RESPIRATORY PROTECTION (S	77.5		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1			·
	LOCAL EXHAUST	<del></del>			SPECIAL	
VENTILATION	MECHANICAL (General)	<del></del>	· · · · · · · · · · · · · · · · · · ·		OTHER	
DOOTS OF LIE OF COMME					<u> </u>	
PROTECTIVE GLOVES	Neoprene	<del> </del>		EYE PROTECT	on Safety Glasse	<u> </u>
OTHER PROTECTIVE EQUIPME	Volatility a	t ambie	ent tem	peratures i	s very low, howev	ver good manufacturing
practices dic	tate the insuran	ce of s	cod ver	ntilation a	nd air movement.	
			3.		THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE P	·
PRECAUTIONS TO BE TAKEN  Material should to					periods of time.	See reactivity data
OTHER PRECAUTIONS						
					0908-1826	TRW-00460 _

# U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration MATERIAL SAFETY DATA SHEET

#### Section I

SIC #2842

ISSUE DATE: 12/85

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NUMBER

Shield Packaging Co., Inc.

617-949-0900

ADDRESS | Peter St. Webster, MA 01570

CHEMICAL NAME AND SYNONYMS - N/A TRADE NAME - MEYER GAGE CO., INC.

CHLOROTHENE CLEANER

CHEMICAL FAMILY - Mixture

FORMULA - N/A

Section II - HAZARDOUS INGREDIENTS

CAS I

Hazardous Mixtures of liquids, solids, or gases

% TLV(units)

71-55-6

96-98 350 ppm (OSHA.

Ethane, 1,1,1-Trichloro- Syn: 1,1,1-Trichoroethane 96-98

ACGIH: 450 ppm

STEL)

124-38-9

Carbon Dioxide Syn: Carbonic Acid Gas

2-4

8000 ppm

Section III - PHYSICAL DATA

BOILING POINT (F) - N/A

SPECIFIC GRAVITY (H20 = 1) - Approx. 1.2 @ 25/25 Deg. C.

VAPOR PRÉSSURE (mm Hg)

Not > 90 psig @ 70 degrees F.

% VOLATILE BY VOLUME - Essent. 100 %

VAPOR DENSITY (AIR=1) Approx. 4.0

EVAPORATION RATE (Butyl Acetate =1) < 1 slower

APPEARANCE AND ODOR - Colorless Aerosol, Irritating odor at high concentrations

SOLUBILITY IN WATER - Not > 0.07g/100g @ 25 degrees C.

Section IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (method used) -None (TOC,TCC,COC)

. . . .

FLAMMABLE LIMITS
@ 25 degrees C.

Lel 6% Uel

EXTINGUISHING MEDIA - Water fog, chemical foam.

SPECIAL FIRE FIGHTING PROCEDURES - Self contained breathing apparatus. to prevent possible bursting.

Cool uninvolved cans

UNUSUAL FIRE AND EXPLOSION HAZARDS-

Excessive heat may tend to thermally degrade materials. See Section VI

#### Section V - Health Hazard Data

THRESHOLD LIMIT VALUE - N/E for product. See Section II for component TLV's

#### EFFECTS OF OVEREXPOSURE:

EYES: Acute pain with slight transient irritation and slight transient corneal injury.

Transient irritation possible with drying or flaking of skin on repeated or prolonged SKIN: contact.

Not likely to be ingested in acutely toxic amounts. If aspirated liquid may be rapidly absorbed causing injury to other body systems.

INHALATION: Anesthetic or Narcotic effects to dizziness, drunkeness as vapor concentrations increase. In poorly or non ventilated areas vapors may readily collect and cause unconsciousness or be fatal.

## EMERGENCY AND FIRST AID PROCEDURES :

EYES: Wash with large amounts of tempered water. If irritation develops or persist consult

Wash off with mild soap and water. If irritation develops or persist consult SKIN: physician.

INGESTION: Do not induce vomiting. Seek immediate medical attention.

INHALATION: Remove to fresh air. If breathing has ceased give artificial respiration. Seek immediate medical attention.

#### Section VI- REACTIVITY DATA

STABILITY - Stable

CONDITIONS TO AVOID - Excessively high temperatures that will tend to decompose materials (Welding arcs. etc.)

INCOMPATIBILITY - (materials to avoid)- Avoid prolonged contact with or storage in aluminum or its alloys. (Metallic aluminum, Zinc Powder, etc.)

HAZARDOUS DECOMPOSITION PRODUCTS - Thermal (heat) deterioration may produce Hydrogen Chloride and very small amounts of Phosgene and Chlorine.

HAZARDOUS POLYMERIZATION - Will NOT Occur.

CONDITIONS TO AVOID - None Known

#### Section VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED - Small spills: mop or wipe up. Remove to out of doors. Large spills: Ventilate area. Contain liquid and transfer to steel Lary drums. Cap tightly. * 1.7

WASTE DISPOSAL METHOD - Dispose of in accordance with Federal, State and Local Regulations. 19.4. 新国家的一体产品的主义企业

Section VIII-SPECIAL PROTECTION INFORMATION

#### RESPIRATORY PROTECTION!(specify type):

VENTILATION - Use only in well ventilated area. LOCAL EXHAUST - To keep vapor concentrations below TLV MECHANICAL - In low lying or confined areas where vapors may accumulate. PROTECTIVE GLOVES - Where repeated or prolonged contact is expected with material. OTHER PROTECTIVE EQUIPTMENT - N/A

TRW-00462

## Section IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE - Store in a cool, dry area, away from direct sunlight. Do not puncture or incinerate can.

OTHER PRECAUTIONS - Read label precautions thoroughly before use. Use only as directed. Avoid spraying on skin or into face or eyes. KEEP FROM REACH OF CHILDREN

Dow Chemica FURS Ax Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 16896

Page: 1

PRODUCT NAME: CHLOROTHENE (R) SW SOLVENT

Effective Date: 05/12/89 Date Printed: 05/23/89

MSDS:001111

## INGREDIENTS: (% w/w, unless otherwise noted)

The hazard information presented is based on tests conducted on this or similiar mixtures. Therefore, pursuant to the OSHA Hazard Communication Standard (see 29 CFR Part 1910.1200 (g) (2) (b)), the information is based on the tested mixture and not individual ingredients.

## 2. PHYSICAL DATA:

BOILING POINT: 165F (74C)
VAP PRESS: 100 mmHg @ 20C
VAP DENSITY: 4.55
SOL. IN WATER: 0.07 g/100g @ 25C
SP. GRAVITY: 1.321 @ 25/25C
APPEARANCE: Colorless liquid.
ODOR: Irritating odor at high concentrations.

#### 3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: None METHOD USED: TOC, TCC, COC

FLAMMABLE LIMITS
LFL: 7.5% @ 25C
UFL: 12.5% @ 25C

EXTINGUISHING MEDIA: Water fog.

FIRE & EXPLOSION HAZARDS: Vapors of this solvent may develop a flammable atmosphere in confined or poorly-ventilated areas.

(Continued on Page 2)
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Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 16896

Page: 2

PRODUCT NAME: CHLOROTHENE (R) SM SOLVENT

Effective Date: 05/12/89 Date Printed: 05/23/89

MSDS:001111

## 3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

FIRE-FIGHTING EQUIPMENT: Wear positive pressure, self-contained breathing apparatus.

#### 4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Avoid open flames, welding arcs or other high temperature sources which induce thermal decomposition.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Prolonged contact with free water may result in corrosion and diminished stabilizer levels. Prolonged contact with, or storage in aluminum, its alloys, and particularly metallic aluminum and zinc powders should be avoided. These reactive metals can cause hydrochloric acid gas to form and, if confined as in an aerosol can or pump, the gas pressure may rupture the container.

HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen chloride and very small amounts of phosgene and chlorine.

HAZARDOUS POLYMERIZATION: Will not occur.

#### 5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Small leaks: Mop up, wipe up, or soak up immediately. Remove to out-of-doors.

Large spills: Evacuate area. Contain liquid; transfer to closed metal containers. Keep out of water supplies.

DISPOSAN METHOD: When disposing of the unused contents, the preferred options are to send to licensed reclaimer, or to permitted incinerators. Any disposal practice must be in compliance with federal, state, and local regulations. Do not dump into sewers, on the ground, or into any body of water.

(Continued on Page 3)
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Product Code: 16896

Page: 3

PRODUCT NAME: CHLOROTHENE (R) SM SOLVENT

Effective Date: 05/12/89 Date Printed: 05/23/89

MSDS:001111

#### 6. HEALTH HAZARD DATA:

EYE: May cause pain. May cause slight transient (temporary) irritation with slight transient corneal injury. Vapors may irritate eyes.

SKIN CONTACT: Prolonged or repeated exposure may cause skin

irritation. Repeated contact may cause drying or flaking of skin.

SKIN ABSORPTION: A single prolonged skin exposure is not likely to result in absorption of harmful amounts. The LD50 for rabbits is about 15,000 mg/kg.

INGESTION: Single dose oral toxicity is low. The LD50 for rats is >10,000 mg/kg. If aspirated (liquid enters the lung), may be rapidly absorbed through the lungs and result in injury to other body systems.

INHALATION: Minimal anesthetic or narcotic effects may be seen in the range of 500-1000 ppm trichloroethane. Progressively higher levels over 1000 ppm may cause dizziness, drunkenness; concentrations as low as 10,000 ppm can cause unconsciousness and death. These high levels may also cause cardiac arrhythmias (irregular heartbeats). In confined or poorly ventilated areas, vapors which readily accumulate can cause unconsciousness and death.

SYSTEMIC & OTHER EFFECTS: Based on available data, repeated exposures are not anticipated to cause any significant adverse effects. The formulation containing 1,1,1-trichloroethane, 1,4-dioxane, 1,2-butylene oxide, and nitromethane was tested in long-term animal studies and did not cause cancer. Birth defects are unlikely. Exposures having no adverse effects on the mother should have no effect on the fetus. In animal studies, has been shown not to interfere with reproduction. Results of in vitro (test tube) mutagenicity tests have been negative. Results of mutagenicity tests in animals have been negative.

(Continued on Page 4)
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Product Code: 16896

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PRODUCT NAME: CHLOROTHENE (R) SM SOLVENT

Effective Date: 05/12/89 Date Printed: 05/23/89

MSDS:001111

#### 7. FIRST AID:

EYES: Irrigate immediately with water for at least 5 minutes.

SKIN: Wash off in flowing water or shower.

INGESTION: Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

INHALATION: Remove to fresh air. If not breathing, give mouth-to-mouth resuscitation. If breathing is difficult, give oxygen. Call a physician.

NOTE TO PHYSICIAN: Because rapid absorption may occur through lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by an attending physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Exposure may increase "myocardial irritability." Do not administer sympathomimetic drugs unless absolutely necessary. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

#### 8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): 1,1,1-Trichloroethane (methyl chloroform): OSHA PEL and ACGIH TLV are 350 ppm TWA, 450 ppm STEL. Dioxone (diethylene ether): OSHA PEL and ACGIH TLV are 25 ppm, Skin.

ACGIH TLV is 25 ppm (skin) for diethylene ether. OSHA PEL is 100 ppm (skin) for diethylene ether. Dow Industrial Hygiene Guide for 1,2-butylene oxide is 40 ppm (excursion 100 ppm). ACGIH TLV and OSHA PEL for nitromethane is 100 ppm.

VENTILATION: Control airborne concentrations below the exposure guideline. Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations. Lethal

(Continued on Page 5)
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Product Code: 16896

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PRODUCT NAME: CHLOROTHENE (R) SM SOLVENT

Effective Date: 05/12/89 Date Printed: 05/23/89 MSDS:001111

#### 8. HANDLING PRECAUTIONS: (CONTINUED)

concentrations may exist in areas with poor ventilation.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator. For emergency and other conditions where the exposure guideline may be greatly exceeded, use an approved positive pressure self-contained breathing apparatus. In confined or poorly ventilated areas, use an approved positive pressure self-contained breathing apparatus.

SKIN PROTECTION: For brief contact, no precautions other than clean body-covering clothing should be needed. When prolonged or frequently repeated contact could occur, use protective clothing impervious to this material. Selection of specific

items such as gloves, boots, apron, or full body suit will depend on operation.

EYE PROTECTION: Use safety glasses. Where contact with liquid is likely, chemical goggles are recommended because eye contact with this material may cause discomfort, even though it is unlikely to cause injury.

#### 9. ADDITIONAL INFORMATION:

**REGULATORY REQUIREMENTS:** 

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Handle

(Continued on Page 6)

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Product Code: 16896

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PRODUCT NAME: CHLOROTHENE (R) SM SOLVENT

Effective Date: 05/12/89 Date Printed: 05/23/89

MSDS:001111

#### 9. ADDITIONAL INFORMATION: (CONTINUED)

with reasonable care. Avoid breathing vapors. Store in a cool dry place. Concentrated vapors of this product are heavier than air and will collect in low areas such as pits, degreasers, storage tanks, and other confined areas. Do not enter areas where vapors of this product are suspected unless special breathing apparatus is used and an observer is present for assistance.

1,1,1-Trichloroethane products should not be packaged in aluminum aerosol cans or with finely divided aluminum or its alloys in an aerosol can.

Aluminum is not an acceptable material of construction for pumps, mixers, fittings, storage tanks for 1,1,1-trichloroethane products or formulations. Metallic aluminum and zinc powders should be avoided.

MSDS STATUS: Revised Section 8.

#### SARA 313 INFORMATION:

This product contains the following substances subject to the reporting requirements of section 313 of Title 111 of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	 CONCENTRATION	
1,1,1-TRICHLOROETHANE (METHYL CHLOROFORM 1,4-DIOXANE	 96.5	*

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The Information Herein Is Given In Good Faith, But No Warranty,
Express Or Implied, Is Made. Consult The Dow Chemical Company
For Further Information.

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## Man-GILL CHEMICAL COMPANY

23000 ST. CLAIR AVE. • CLEVELAND, OHIO 44117 • 216 - 486-5300 • CHEMTREC 800 - 424-9300



## **MATERIAL SAFETY DATA SHEET**

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## Man-GILL CHEMICAL COMPANY

## MATERIAL SAFETY DATA SHEET

CHROME OXIDE GREEN

07860

		- CILLI	CHRUME	UXIDE GREEN	4	07860
	, <b>3</b> 1 •	Section V -	- Reactivi	ity Data		
STABILITY	Unstable	Conditions to Avoid				<del></del>
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	mposition Products	<del></del>	<del></del>	····		
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HAZARDOUS	May Occ	Cond	itions to Avoid			
POLYMERIZATIO			Ε			
		Section VI —	Health Ha	zard Data		
Effects of Overex	posure	MILD SKI	N IRRITAN	T. HARMFUL	IF SWALLO	WED.
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Emergency and F	First Aid Procedures				<del></del>	
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AND CONT	ACT PHYSICIA	N IMMEDIATEL	Υ.			
Skin (Contact):	WASH	WITH SOAP A	ND WATER.	CONTACT PE	YSICIAN	IF
IRRITATIO	N PERSISTS.					
Ingestion (Swallo	wing): DRIN	LARGE QUAN	TITIES OF	MILK OR WA	ITER. CON	SULT
PHYSICIAN	I IMMEDIATELY.	ı				
Inhalation (Breath	ning): REMO	VE TO FRESH	AIR.			
	Section \	/II — Precaut	ions for Sa	ofe Handling	& Use	
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		Section VIII -	- Control	Measures		
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Protective Gloves	<del></del>		Eye Protec	tion		
NEOPRENE	RUBBER		SPLASH	GOGGLES OF	FACE SHI	ELD
Other Protective	Clothing or Equipment					
PROTECTIV	E CLOTHING S	JFFICIENT TO	PREVENT	SKIN CONTAC	TR	W-00470
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ACCURATE TO IMPLIED OR O THE USE THE	ATION PRESENTED HE O THE BEST OF SELLEF OF MERCHANTABILITY PREOF, SELLER ASSUM ANY PROPERTY AND B	I'S KNOWLEDGE, HOV REGARDING THE AC MES NO RESPONSIBI	VEVER, SELLER CURACY OF SUI LITY FOR INJUR	MAKES NO WARRAI CH DATA OR THE R	NTY WHATSOEVE ESULTS TO BE O	R, EXPRESSED, BTAINED FROM

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ATTN;

## Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET



CC: CUSTOMER SERVICE. Shipbuilding, and Shippreaking (29 CFR 1918, 1918, 1917)

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MANUFACTURER'S NAME			· · · · · · · · · · · · · · · · · · ·		ICY TELEPHON		
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SECTION	111 -	HAZAF	RDOUS INGREDI	ENTS			·
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VAPER DENSITY (A.R.II NA			EVAPORATION RA				NA
SOLBILITY IN WATER Soluble							-
APPLARANCE AND ODDE NA							<del>-</del>
SECTION IV .	FIR	E AND E	XPLOSION HAZ	ARD DAT	ľA		
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SPECAL FIRE FIGHTING PROCEDURES .			0908-1	.837	TRW-	0047	71 -
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when touched	with contam	inate	ed hand	s.	Chrow	ic acid splas	h causes perme	ment eye injury.
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	\$1	ECTI	ON VII	. ;	SPILL (	OR LEAK PRO	CEDURES	-
TEPS TO BE TAKE	N IN CASE MA	ERIA	L IS AEL	ZAJ	EDOAS	PILLED		
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				,				
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or using toilet		. AV	MIG SK	<u> </u>	wntact	- t		<del></del>

## PRODUCT NAME

Comtra No.SC-000-019

Refer to Material Safety Data Sheet for more information.



## FIRE HAZARD

EXTREMELY DANGEROUS FIRE AND EXPLOSION HAZARD FIRE AND EXPLOSION HAZARD AT NORMAL TEMP

WILL BURN AT TEMPS ABOVE 100 F

WILL BURN AT TEMPS ABOVE 200 F

(Blue)

0

W

USE NO WATER

WILL NOT BURN

HEALTH

## HAZARD

- 4. EXTREME HAZARD -AVOID CONTACT OR BREATHING VAPOR
- SEVERE HAZARD -USE SPECIAL CLOTHING AND MASKS
- HAZARDOUS USE MASKS: OR . SPECIAL VENTILATION .
- SLIGHTLY HAZARDOUS -IRRITATING
- O. NORMAL MATERIAL

(Red) 0 (Yellow) 0

POLYMERIZES

ANSI: WARNING! WELDING, CUTTING OR GRINDING ON THIS CASTING WILL GENERATE TOXIC DUST OR FUMES.

## INGREDIENTS:

(PERCENT)

Chromium

0.75 - 10.0

Iron Manganese

Balance 0.30 - 14.0

See Material Safety Data Sheet for

a listing of minor ingredients.

# STORAGE AND HANDLING

4.

3.

2.

1.

0.

No Special Precautions

TRW-00473

REACTIVITY

HAZARD

EXTREME HAZARD -

SEVERE EXPLOSION

VIOLENT CHEMICAL

CHANGE POSSIBLE

NORMALLY STABLE

UNSTABLE IF HEATED

VACATE AREA IN

CASE OF FIRE

HAZARD

MATERIAL SAFETY DATA SHEET (MSDS) SC-000-019 REV. 1 DATE 11/22/85 CODE 06-04 CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200 "HAZARD COMMUNICATION" AND TO VARIOUS STATE "EMPLOYEE RIGHT TO KNOW" LAWS

COPYRIGHT 1985 STEEL FOUNDERS SOCIETY OF AMERICA

SECTION	I	PRODUCT	IDENTIFICATION	
 				_

This MSDS supplied for: Chromium Alloyed Steel Castings

ACI alloy designation (Grades) ASTM No. С

A128/128M-84

WC6, WC9, WC11, C5, C12 A217/A217M-84

6, 8, 9, 10 A356/A356M-84

C23, C24 A389/A389M-84

CP5, CP5b, CP7, CP9, CP11, CP12 A426-80

CP21, CP22

8N, 9N, 8Q, 9Q, A487/A487M-84

CA-2, CH-12, CH-13, CO-1 `A597/A597M-84

70, 80, 120, 15A A732/A732M-84

DIN1, D1Q1, D1N2, D1Q2, D1N3, D1Q3 A757/A757M-84

1, 2, 3 MIL-S-15464B

(SHIPS)

VENDOR NAME AND ADDRESS:

EMERGENCY PHONE NUMBER:

MH FORD, NEW HAMPS GRE 03055

HILPHONE (603) 673-1100 TMX (10) 306-1865

THEX 953014 CABLE ADDRESS HITCHINER

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 0 REACTIVITY: 0

THE FOURTH DIAMOND:

ANSI: WARNING! WELDING, CUTTING, OR GRINDING ON THIS CASTING WILL GENERATE TOXIC DUST OR FUMES.

TRW-00474

## SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Carbon	7440-44-0	0.20-1.35	N/E	N/E
Chromium (VI)*	7440-47-3	0.75-10.0	0.5 mg/cu.m	l mg/cu.m
(certain insoluble for	ms)		0.05 mg/cu.m	N/E
Copper (As dust)	7440-50-8	0-0.50	1.0 mg/cu.m	1.0 mg/cu.m
(As fume)	7420 00 6	halanaa	0.2 mg/cu.m	0.1 mg/cu.m
Iron (As fume)	7439-89-6	balance	5 mg/cu.m	10 mg/cu.m
Manganese (As dust) (As fume)	7439-96-5	0.30-14.0	C 5 mg/cu.m 1 mg/cu.m	C 5 mg/cu.m C 5 mg/cu.m
Molybdenum	7439-98-7	0-1.75	10 mg/cu.m	15 mg/cu.m
Nickel	7440-02-0	0-0.50	1 mg/cu.m	1 mg/cu.m
Phosphorus	7723-14-0	0.025-0.07	0.1 mg/cu.m	0.1 mg/cu.m
Silicon	7440-21-3	0.20-2.00	10 mg/cu.m	15 mg/cu.m
			(as nuisance	dust)
Sulfur	7704-34-9	0.025-1.00	N/E	N/E
Tungsten	7440-33-7	0-1.70	5 mg/cu.m	N/E
Vanadium		0-1.20	_	
(as vanadium oxide)	1314-62-1			
(As dust)			0.05 mg/cu.m	0.5 mg/cu.m
(As fume)			0.05 mg/cu.m	

C means ceiling limit. These are limits which should not be exceeded, even for a short time. All other are 8 hr Time-weighted average concentrations.

Elements having a listed percentage greater than zero will be present in all grades. Those having a value of "0" may not be present in certain grades. Refer to Steel Founders' Society of America "Steel Castings Handbook" Supplement 2 for specifications on a particular ASTM alloy and grade.

* Water insoluble hexavalent chromium is classified as a human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH). Approximately 66% of the total chromium in welding fume is hexavalent, and only 5% of that is insoluble. Overexposure to hexavalent chromium is not likely if general welding fume is controlled. (The alloy and its dust does not contain insoluble hexavalent chromium.)

## SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form at room temperature.

Dust or fumes are generated by machining, grinding, or welding on these castings. Since the castings contain a high percentage of iron, most of the dust or fume will be iron or iron oxide. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m., as if it were a nuisance dust, will serve as a guideline until a TLV is established.

TRW-00475

N/E means none established. N/A means not applicable.

AGE 3

Overexposure to iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Since these castings contain up to 10 percent chromium, airborne contaminants from machining or welding will contain chromium dust or fume. If total welding fume is adequately controlled, chromium will also be controlled.

Welding or flame cutting may convert a small fraction of the chromium to the water insoluble hexavalent (carcinogenic) form.

These casting contain up to 0.5% nickel. Some forms of nickel have been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting process no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all.

Some grades contain moderate levels of manganese. Long term overexposure to manganese dust or fume can cause manganese poisoning. If welding or flame cutting fume is controlled to the TLV for total fume, the manganese fume will also be controlled.

Grinding on castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing free silica, which can cause silicosis.

Carbon, copper, molybdenum, phosphorus, silicon, sulfur, tungsten, and vanadium are also contained in the castings in low amounts. Overexposure to these would not be likely. If airborne concentrations of total dust and fume are controlled to levels below their respective TLVs and PELs, these minor constituents would also be adequately controlled.

## SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor

BOILING POINT: variable depending on casting grade

VAPOR PRESSURE: N/A
VAPOR DENSITY: N/A

SOLUBILITY IN WATER: N/A

SPECIFIC GRAVITY: 7.86 for iron PERCENT VOLATILE BY VOLUME: N/A

EVAPORATION RATE: N/A

SECTION V - FIRE AND EXPLOSION DATA

SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

TRW-00476

N/E means none established. N/A means not applicable. N/D means no data available.

## SECTION VI - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not removed.

SKIN: None known.

BREATHING: Prolonged or repeated overexposure to iron oxide produced in grinding or welding may cause siderosis. Overexposure to manganese dust can cause manganism. Symptoms of manganism are sleepiness, weakness in the legs, emotional disturbances, uncontrollable laughter, and spastic gait. Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases. SWALLOWING: N/A

NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A

IF BREATHED: (Fumes from welding): Move to fresh air.

IF SWALLOWED: N/A

#### SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur. STABILITY: Stable.

INCOMPATIBILITY: Chromium metal dust may burn or explode when in contact with ammonium nitrate.

SECTION VIII - SPILL OR LEAK PROCEDURES

## STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Did to be timen in clos initiality to negotiable on billings.

_______

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

## SECTION IX - PROTECTIVE EQUIPMENT TO BE USED TRW-00477

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL.

VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs.

PROTECTIVE GLOVES: Work gloves advisable for handling castings. EYE PROTECTION: Safety glasses with side shields and/or face

shields for particles (grinding). Welding goggles or helmet for welding.

OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings.

If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

N/E means none established. N/A means not applicable. N/D means no data available.

PAGE 5

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: No special precautions.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

## PRODUCT NAME

Comtra No.S C-000-029

Refer to Material Safety Data Sheet for more information.



## FIRE HAZARD

4. EXTREMELY DANGEROUS FIRE AND EXPLOSION HAZARD
3. FIRE AND EXPLOSION HAZARD AT NORMAL TEMP

. WILL BURN AT TEMPS ABOVE 100 F

1. WILL BURN AT TEMPS ABOVE 200 F

(Blue)

0

O. WILL NOT BURN

HEALTH

## HAZARD

- 4. EXTREME HAZARD AVOID CONTACT OR
  BREATHING VAPOR
- 3. SEVERE HAZARD USE SPECIAL CLOTHING
  AND MASKS
- 2. HAZARDOUS USE
  MASKS OR SPECIAL
  VENTILATION
- 1. SLIGHTLY HAZARDOUS IRRITATING
- 0. NORMAL MATERIAL

REACTIVITY

## HAZARD

- EXTREME HAZARD -VACATE AREA IN CASE OF FIRE
- 3. SEVERE EXPLOSION HAZARD
  - VIOLENT CHEMICAL CHANGE POSSIBLE
  - UNSTABLE IF HEATED
- 0. NORMALLY STABLE

USE NO POLYMERIZES WATER

(Red)

0

(Yellow)

0

ANSI: WARNING! WELDING, CUTTING OR GRINDING ON THIS CASTING WILL GENERATE TOXIC DUST OR FUMES.

#### INGREDIENTS .

#### (PERCENT)

Chromium Iron Nickel 11.5 - 30.0 Balance 0 - 9.0

See Material Safety Data Sheet for a listing of minor ingredients.

## STORAGE AND HANDLING

1.

No Special Precautions

TRW-00479

MATERIAL SAFETY DATA SHEET (MSDS)

SC-000-029 REV. 1 DATE 11/22/85 CODE 06-04

CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200

"HAZARD COMMUNICATION" AND TO VARIOUS STATE

"EMPLOYEE RIGHT TO KNOW" LAWS

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•	•
	CROWING I DRODUCT IDENTIFICATION

<ul> <li>SECTION I PRODUCT IDENTIFICA</li> </ul>	ATION	
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This MSDS supplied for:	Chromium Based Steel Castings'
ASTM No.	ACI alloy designation (Grades)
A217/A217M-84	CA-15
A297/A297M-84	HC, HD
A351/A351M-84	CF10SMnN
A352/A352M-84	CA6NM
A356/A356M-84	CA 6NM
A426-80	CPCA15
A487/A487M-84	CA 6NM, CA 15M, CA 15a, CA 15
A597/A597M-84	CD-2, CD-5
A608-79	HC30, HD50
A743/A743M-84	CA-15, CA-15M, CB-30, CC-50, CA-40 CF10SMnN, CA-6NM, CD-4MCu, CA-6N, CA-28MWV
A744/A744M-84	CD-4MCu
A747/A747M-84	CB7Cu-1, CB7Cu-2
A757/A757M-84	E3N

VENDOR NAME AND ADDRESS:

**MILITARY** 

MILS-S 16993A

HITCHINER

MANUFACTURING CO., INC.

MILLORD NEW HAMPSHIRE 03055

GLEPHONE 603: 673-1100 TWX (710: 366-186)

1

EMERGENCY PHONE NUMBER:

FIRE: 0 REACTIVITY: 0

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 0 REACTIVITY: 0
THE FOURTH DIAMOND:

ANSI: WARNING! WELDING, CUTTING, OR GRINDING ON THIS CASTING WILL GENERATE TOXIC DUST OR FUMES.

= ==

## SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Carbon	7440-44-0	0.06-1.60	N/E	N/E
Chromium	7440-47-3	11.5-30.0	0.5  mg/cu.m	1 mg/cu.m
Chromium(VI)*				
(certain insoluble for			0.05 mg/cu.m	N/E
Cobalt	7440-48-4	0-3.50	0.1  mg/cu.m	0.1  mg/cu.m
Columbium		0-0.35	N/E	N/E
(same as Niobium)				
Copper (As dust)	7440-50-8	0-3.25	1.0  mg/cu.m	1.0 mg/cu.m
(As fume)			0.2 mg/cu.m	0.1 mg/cu.m
Iron (As fume)	7439-89-6	balance	5 mg/cu.m	10 mg/cu.m
Manganese (As dust)	7439-96-5	0.70-9.0	C 5 mg/cu.m	C 5 mg/cu.m
(As fume)			1 mg/cu.m	C 5 mg/cu.m
Molybdenum	7439-98-7	0-2.25	10 mg/cu.m	15 mg/cu.m
Nickel	7440-02-0	0-9.0	1 mg/cu.m	1 mg/cu.m
Nitrogen	7727-37-9	0-0.18	N/E	N/E
Phosphorus	7723-14-0	0.02-0.060	0.1 mg/cu.m	0.1 mg/cu.m
Silicon	7440-21-3	0.65-4.50	10 mg/cu.m	15 mg/cu.m
			(as nuisance	-
Sulfur	7704-34-9	0.02-0.040	N/E	N/E
Tungsten	7440-33-7	0-1.25	5 mg/cu.m	N/E
Vanadium		0-1.00	·g/ • · · · · ·	, _
(as vanadium oxide)	1314-62-1	2 2 3 3		
(As dust)	101. <b>01</b> 1		0.05 mg/cu.m	0.5 mg/cu.m
(As fume)			0.05 mg/cu.m	<b>-</b>
(210 Lanc)			oros mg/carm	orr mg/curm

C means ceiling limit. These are limits which should not be exceeded, even for a short time. All other are 8 hr Time-weighted average concentrations.

Elements having a listed percentage greater than zero will be present in all grades. Those having a value of "0" may not be present in certain grades. Refer to Steel Founders' Society of America "Steel Castings Handbook" Supplement 2 for specifications on a particular ASTM alloy and grade.

Water insoluble hexavalent chromium is classified as a human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH). Approximately 66% of the total chromium in welding fume is hexavalent, and only 5% of that is insoluble. Overexposure to hexavalent chromium is not likely if general welding fume is controlled. (The alloy and its dust does not contain insoluble hexavalent chromium.)

#### SECTION III - OVERVIEW

______ There are no chemical hazards from these castings in solid form at room temperature.

Dust or fumes are generated by machining, grinding, or welding on these castings. Since the castings contain a high percentage of iron, most of the dust or fume will be iron or iron oxide. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m., as if it were a nuisance dust, will serve as a quideline until a TLV is established.

Overexposure to iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Since these castings contain up to 30 percent chromium, and up to 9 percent nickel, airborne contaminants from machining or welding will contain chromium and nickel dust or fume. If total welding fume is adequately controlled, chromium and nickel will also be controlled.

Welding or flame cutting may convert a small fraction of the chromium to the water insoluble hexavalent (carcinogenic) form.

. Some forms of nickel have been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting process no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all.

Some grades contain moderate levels of manganese. Long term overexposure to manganese dust or fume can cause manganese poisoning. If welding or flame cutting fume is controlled to the TLV for total fume, the manganese fume will also be controlled.

Grinding on castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing free silica, which can cause silicosis.

Carbon, cobalt, copper, niobium, nitrogen, molybdenum, phosphorus, silicon, sulfur, tungsten, and vanadium are also contained in the castings in low amounts. Overexposure to these would not be likely. If airborne concentrations of total dust and fume are controlled to levels below their respective TLVs and PELs, these minor constituents would also be adequately controlled.

#### SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor

BOILING POINT: variable depending on casting grade

VAPOR PRESSURE: N/A

VAPOR DENSITY: N/A

SOLUBILITY IN WATER: N/A

TRW-00482

N/E means none established. N/A means not applicable.

N/D means no data available.

SPECIFIC GRAVITY: 7.86 for iron PERCENT VOLATILE BY VOLUME: N/A EVAPORATION RATE: N/A

SECTION V - FIRE AND EXPLOSION DATA

_______

Castings will not burn or explode.

SECTION VI - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not removed.

SKIN: None known.

BREATHING: Prolonged or repeated overexposure to iron oxide produced in grinding or welding may cause siderosis. Overexposure to manganese dust can cause manganism. Symptoms of manganism are sleepiness, weakness in the legs, emotional disturbances, uncontrollable laughter, and spastic gait. Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases. SWALLOWING: N/A

NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A

IF BREATHED: (Fumes from welding): Move to fresh air.

IF SWALLOWED: N/A

SECTION VII - REACTIVITY DATA

______

HAZARDOUS POLYMERIZATION: Will not occur.

STABILITY: Stable.

INCOMPATIBILITY: Chromium metal dust may burn or explode when in contact with ammonium nitrate.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

5

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL.

VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs.

PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for

welding. OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets

if arc-air gouging or cutting, or welding on castings. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: No special precautions.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

## PRODUCT NAME

Comtra No.S C-000-015

Refer to Material Safety Data Sheet for more information.



## FIRE HAZARD

4. EXTREMELY DANGEROUS FIRE AND EXPLOSION HAZARD

3. FIRE AND EXPLOSION HAZARD AT NORMAL TEMP

2. WILL BURN AT TEMPS ABOVE 100 F

1. WILL BURN AT TEMPS ABOVE 200 F

(Blue)

0

O. WILL NOT BURN

HEALTH

## HAZARD

- 4. EXTREME HAZARD AVOID CONTACT OR
  BREATHING VAPOR
- 5. SEVERE HAZARD USE SPECIAL CLOTHING
  AND MASKS
- 2. HAZARDOUS USE MASKS OR SPECIAL VENTILATION
- 1. SLIGHTLY HAZARDOUS IRRITATING
- 0. NORMAL MATERIAL

REACTIVITY

## HAZARD

- 4. EXTREME HAZARD -VACATE AREA IN CASE OF FIRE
- 3. SEVERE EXPLOSION HAZARD
  - VIOLENT CHEMICAL CHANGE POSSIBLE
  - UNSTABLE IF HEATED
- 0. NORMALLY STABLE

USE NO POLYMERIZES WATER

(Red)

0

(Yellow)

0

ANSI: WARNING! CUTTING, OR GRINDING ON THIS CASTING WILL GENERATE TOXIC DUST OR FUMES.

## INGREDIENTS : (PERCENT)

Chromium Iron Nickel 1.35 - 1.85 Balance

kel 2.5 - 3.90

See Material Safety Data Sheet for a listing of minor ingredients.

## STORAGE AND HANDLING

1.

No Special Precautions

TRW-00485

MATERIAL SAFETY DATA SHEET (MSDS)

SC-000-015 REV. 1 DATE 10/11/85 CODE 06-04

CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200

"HAZARD COMMUNICATION" AND TO VARIOUS STATE

"EMPLOYEE RIGHT TO KNOW" LAWS

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SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for: Chromium/Nickel Alloyed

ASTM No.

ACI alloy designation (Grades)

A757/A757M-84

ElQ, E2N1, E2N2, E2N3, E2Q1, E2Q2, E2Q3

VENDOR NAME AND ADDRESS:

EMERGENCY PHONE NUMBER:

HITCHINER

MANUFACTURING CO., INC.

MANUFACTURING CO., INC.

MANUFACTURING CO., INC.

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TO DECEMBER OF STREET AND RESERVED TO THE HISTORY

FIRE HAZARD CLASS: HEALTH: 0
THE FOURTH DIAMOND:

FLAMMAdility: 0 REACTIVITY: 0

ANSI: WARNING! WELDING, CUTTING, OR GRINDING ON THIS CASTING WILL GENERATE TOXIC DUST OR FUMES.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Carbon	7440-44-0	0.20-0.22	N/E	N/E
Chromium	7440-47-3	1.35-1.85	0.5 mg/cu.m	1 mg/cu.m
Chromium(VI)*				
(certain insoluble fo	rms)		0.05 mg/cu.m	N/E
Copper (As dust)	7440-50-8	<b>0.</b> 50	1.0 mg/cu.m	1.0 mg/cu.m
(As fume)			0.2 mg/cu.m	0.1 mg/cu.m
Iron (As fume)	7439-89-6	balance	5 mg/cu.m	10 mg/cu.m
Manganese (As dust)	7439-96-5	0.40-0.70	C 5 mg/cu.m	C 5 mg/cu.m
(As fume)			1 mg/cu.m	C 5 mg/cu.m
Molybdenum	7439-98-7	0.35-0.60	10 mg/cu.m	15 mg/cu.m
Nickel	7440-02-0	2.5-3.90	1 mg/cu.m	1 mg/cu.m
Phosphorus	7723-14-0	0.020-0.025	0.1 mg/cu.m	0.1 mg/cu.m
Silicon	7440-21-3	0.60	10 mg/cu.m	15 mg/cu.m
			(as nuisance	dust)
Sulfur	7704-34-9	0.020-0.025	N/E	N/E
Tungsten	7440-33-7	0-0.10	5 mg/cu.m	N/E
Vanadium		0.03	_	·
(as vanadium oxide)	1314-62-1			
(As dust)			0.05 mg/cu.m	0.5 mg/cu.m
(As fume)			0.05 mg/cu.m	0.1 mg/cu.m

N/E means none established.

N/A means not applicable.

C means ceiling limit. These are limits which should not be exceeded, even for a short time. All other are 8 hr Time-weighted average concentrations.

Elements having a listed percentage greater than zero will be present in all grades. Those having a value of "0" may not be present in certain grades. Refer to Steel Founders' Society of America "Steel Castings Handbook" Supplement 2 for specifications on a particular ASTM alloy and grade.

* Water insoluble hexavalent chromium is classified as a human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH). Approximately 66% of the total chromium in welding fume is hexavalent, and only 5% of that is insoluble. Overexposure to hexavalent chromium is not likely if general welding fume is controlled. (The alloy and its dust does not contain insoluble hexavalent chromium.)

## COCOTON TIL OUDDIEU

#### SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form at room temperature.

Dust or fumes are generated by machining, grinding, or welding on these castings. Since the castings contain a high percentage of iron, most of the dust or fume will be iron or iron oxide. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m., as if it were a nuisance dust, will serve as a guideline until a TLV is established.

Overexposure to iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Since these castings contain up to 10 percent chromium and up to 3.9% nickel, airborne contaminants from machining or welding will contain chromium and nickel dust or fume. If total welding fume is adequately controlled, chromium and nickel will also be controlled.

Welding or flame cutting may convert a small fraction of the chromium to the water insoluble hexavalent (carcinogenic) form.

Some forms of nickel have been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting process no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all.

Grinding on castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing free silica, which can cause silicosis.

TRW-00487

N/E means none established.

N/A means not applicable.

N/D means no data available.

IE SMYLLOWED: N/A

#### TRW-00488

ε

PAGE

N/D means no data available. V/E means none established.
W/E means not applicable. 

# SECTION VII - REACTIVITY DATA HAZARDOUS POLYMERIZATION: Will not occur. STABILITY: Stable. INCOMPATIBILITY: Chromium metal dust may burn or explode when in contact with ammonium nitrate. SECTION VIII - SPILL OR LEAK PROCEDURES STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: If damaged, return castings to vendor or send to scrap reclaimer. Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts

or fume if concentrations exceed the TLV or PEL.

<u>VENTILATION:</u> Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs.

PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: No special precautions.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

# U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

Form Approved OMB No. 44-R1387

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECT	
MANUFACTURER'S NAME Products Division/Lincianutt Milagran Hark	(513) 2/13 181
478 Marburg Avenue, City. State, and ZIP Code of 45209	
Not applicable (NA)	TRADE NAME TONYMS
NA NA	Complex mixture

	DOUS INGREDIENTS	- HAZA	N II	- SECTIO
NGS % TI	ALLOYS AND METALLIC COATINGS	TLV (Units)	*	PAINTS. PRESERVATIVES, & SOLVENTS
none	BASE METAL	le	ho	PIGMENTS
	ALLOYS	_		CATALYST
	METALLIC COATINGS			VEHICLE
	FILLER METAL PLUS COATING OR CORE FLUX			SOLVENTS
none	OTHERS			ADDITIVES
		e	ņo	OTHERS
%   TI	UIDS, SOLIDS, OR GASES	OTHER LI	S OF	HAZARDOUS MIXTUR
es	nitrosamine, which dissipates	ethanol	s d	The CIMPLUS concentrate contain
				in use.

	SECTION III -	PHYSICAL DATA	
BOILING POINT (°F.)	212	SPECIFIC GRAVITY (H20=1)	1.223
VAPOR PRESSURE (mm Hg.)	NA	PERCENT, VOLATILE BY VOLUME (%)	NA
VAPOR DENSITY (AIR=1)	NA	EVAPORATION RATE	like wate
SOLUBILITY IN WATER	100%		
APPEARANCE AND ODOR	clear; ch	emical	

SECTION IV - FIRE A	AND EXPLOSION HAZARD DAT	ΓΑ	
FLASH POINT (Method used)	FLAMMABLE LIMITS	Lei	Uel
None; self-extinguishing	J NA	_	1
EXTINGUISHING MEDIA No fire hazard			
SPECIAL FIRE FIGHTING PROCEDURES NA			
UNUSUAL FIRE AND EXPLOSION HAZARDS None		TRW	-00490
			~ひひマラひ

				·	
		SECTION V	- HEA	LTH HAZARD	DATA
THRESHOLD LIMIT None establ	ished	JE d			
No harmful		SURE Cts expected when u	sed as	recommended.	
EMERGENCY AND	FIRST Wit	AID PROCEDURES th water. EYES: F	lush w	ith running wa	ater for 15 minutes. Call a
physician.	INGE	STION: Do not inde	uce voi	miting. Dilut	e with water or milk. Call a
physician.	INHA	ALATION: No first a	aid red	quired; not vo	olatile.
				EACTIVITY DA	ATA
STABILITY	UNS.	TABLE		S TO AVOID	
	STA				
	t of	concentrate with s	trong	acids.	
None None	MPOSI	TION PRODUCTS	<b>,</b>		
HAZARDOUS		MAY OCCUR		CONDITIONS TO	AVOID
POLYMERIZATION		WILL NOT OCCUR	×		
·					
	···	0507104141		22 1 5 4 4 22 2	
STEDS TO BE TAKE	N 181 C	SECTION VII -			JEDURES
Flush with w					
			•		
		acid-alum-polymer	chemic	al treatment,	or high temperature
incineration	•				
		SECTION VIII - SPE	CIAL P	ROTECTION IN	IFORMATION
RESPIRATORY PRO					
None require	d	AL EXHAUST			TSPEC:AL
VENTILATION	MECH	HANICAL (General)	<del> </del>	· · · · · · · · · · · · · · · · · · ·	OTHER
PROTECTIVE GLOV		Gene	ral	EVE PROTECTION	
Not required		·		Safety goggle	s recommended when handling
- Norman metally	vorki	ng plant protective	e equip	oment.	concentrate.
		SECTION IV	- 5057	CIAL PRECAUT	NONS
PRECAUTIONS TO 8	E TAK	EN IN HANDLING AND STO		JAL PRECAGI	10143
None required					TRW-00491
OTHER PRECAUTION	NS				. ,
See product 1	abel	. Product labels f	or use	in shop avai	lable to bulk users.
					•

GPO 934-170

Form OSHA-20

#### MATERIAL SAFETY DATA SHEET

For Assistance, Contact: Regulatory Affairs Dept. PD Box 907 Ames, IA

#### HACH COMPANY PO BOX 907 AMES, IA 50010

Emergency Telephone # (515) 232-2533

PRODUCT IDENTIFICATION PRODUCT NAME: Chromaver 3 CATALOG NUMBER: 12710 CAS. NO: Not applicable CHEMICAL NAME: Not applicable FORMULA: Not applicable CHEMICAL FAMILY: Not applicable INGREDIENTS II. TWA INGREDIENTS : CAS NUMBER : NATURE of HAZARD Potassium Pyrosulfate :<85 | None listed 17790-62-7 'Aqueous Solution is strongly : None lacidic 1625 | None listed 17487-88-9 Magnesium Sulfate Heptahydrate Moderately toxic; may cause None lirritation KI / NA Other component :Not applicable Not applicable Not applicable III. PHYSICAL DATA : APPEARANCE: white or light pink powder STATE: solid : ODOR: Not determined SOLUBILITY IN: WATER: Slightly soluble : ACID: Soluble : OTHER: Not determined BOILING PT.: NA | MELTING PT.: 215C decomp | SPECIFIC GRAVITY: 2.26 | pH: of 5% saln = 1.1 VAPOR PRESSURE: Not applicable ! VAPOR DENSITY (air=1): NA ! EVAPORATION RATE: NA METAL CORROSIVITY - ALUMINUM: 0.014 in/yr STEEL: ND : SHELF LIFE: stable 6 to 12 months STORAGE PRECAUTIONS: Store in a cool, dry place. IV. FIRE. EXPLOSION HAZARD AND REACTIVITY DATA : FLAMMABILITY LIMITS - LOWER: NA UPPER: NA FLASH PT.: Not applicable ! METHOD: NA SUSCEPTIBLITY TO SPONTANEOUS HEATING: None : AUTOIGNITION PT .: ND SHOCK SENSITIVITY: None EXTINGUISHING MEDIA: water, carbon dioxide, or dry chemical UNUSUAL FIRE AND EXPLOSION HAZARD: May emit toxic fumes HAZARDOUS DECOMPOSITION PRODUCTS: Toxic SOx fumes CXIDIZER: No ! NFPA Codes Health: 2 Flaceability: -Reactivity: -CONDITIONS TO AVOID: Heat, flames, moisture HEALTH HAZARD DATA THIS PRODUCT IS corrosive to eyes, wet skin and respiratory tract. ACUTE TOXICITY: Toxic due to corrosivity RCUTE OF MOST DETRIMENTAL EXPOSURE: ingestion, inhalation TARGET GREANS: all body tissues CHRONIC TOXICITY: Not determined ROUTE OF MOST DETRIMENTAL EXPOSURE: Not determined TARGET ORGANS: Not determined LONG-TERM EFFECTS: Not applicable ROUTE OF EXPOSURE: Not applicable TARGET GREANS: Not applicable **GVEREXPOSURE: Causes burns** 

Hach Europe BP 51 85000 Namur L Belgium

/I. PRECAUTIONARY MEASURES
Wash thoroughly after handling. Avoid contact with eyes, skin and clothing. Do not breathe chemicals. Protect from moisture.
ROTECTIVE EQUIPMENT: hood, disposable gloves, safety glasses, lab coat
VII. FIRST AID
YE AND SKIN CONTACT: Immediately flush eyes and skin with water for 15 minutes. Remove contaminated clothing. Call physician.
NGESTION: Do not induce vomiting. Give large quantities of water. Give at least 1 ounce of milk of magnesia in an equal amount of water, or the whites of 3 eggs. Never give anything by mouth to an unconscious person. Call physician.
MUNITUM: RESDAR TO LLEGIK TIL.
VIII. SPILL AND DISPOSAL PROCEDURES
N CASE OF SPILL OR RELEASE: Cover the contaminated surface with sodium bicarbonate or a soda ash-slaked line mixture (50-50). Mix and add water if necessary to form a slurry. Scoop up slurry and wash down the drain with excess water. Wash the site with soda ash solution.
ISPOSE OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS.
IX. TRANSPORTATION DATA
ROPER SHIPPING MAME: MCR
AZARD CLASS: Not applicable : ID: NA
ATE: 09/05/85! CHANGE NO.: 3925
(. REFERENCES
1) In-house information
2) Judgement of technical person compiling data.
3)
4)
5)
6)
7)
9)

THE INFORMATION CONTAINED HEREIM IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

#### TRANSPARENT GRINDING FLUID

# **CIMPLUS®**

#### **DESCRIPTION**

CIMPLUS grinding fluid is a transparent, water-based chemical solution.

#### **APPLICATION**

Recommended for use on ferrous metals in applications such as centertype, horizontal and vertical spindle surface grinding (both reciprocating and rotary tables), and light-duty centerless work. Also, excellent for toolroom and job shop operation.

While it protects copper and brass machine tool components such as gages, coolant lines, chucks, etc., from corrosion, CIMPLUS is not recommended for grinding aluminum and copper alloys.

CINCINNATI MILACRON

0908-1860

# FEATURES AND BENEFITS

- Transparent operators can see their work in progress.
- Open, free grinding no wheel loading, no burn. Not oily.
   Has good settling properties to help prevent fluid-caused wheel loading. Many parts can be ground between wheel dressings. Production is maximized.
- Good settling improves part finishes. Fines settle fast enough to prevent recirculation of finish-marring grit and swarf, yet slowly enough to avoid clogging return lines in both individual machines and central systems.
- Outstanding ferrous corrosion control protects machine tools and in-process parts from rusting.
- Freedom from rancidity. No "Monday morning" odor. Long fluid life.
- Clean no slippery, oily desposits on machines or parts.
   Operators like the freedom from soiled clothing and oily hands.
- Mild and nonirritating to skin when used within the recommended dilution range.
- CIMPLUS is economical: (1) It is long-lasting, so fluid cost and expensive downtime for cutting fluid changes are minimized; (2) the concentrate is used at very lean dilutions; (3) the mix has a low carry-off; and (4) excellent corrosion control helps minimize rework and scrap.

Ask your local Cincinnati Milacron Distributor for a trial today.



# **CIMPLUS**

#### RECOMMENDED STARTING DILUTIONS

Operation	Carbon Steels, Malleable Iron, Cast Iron	High Alloy Steels, Stainless Steels	Tool Steels, Drill Rod, Cast Steels
Grinding	1:100 (1.0%)	1:150 (0.7%)	1:100 (1.0%)
Machining	1:100 (1.0%)	-	

Not recommended for grinding aluminum and copper alloys -- may cause stain.

CIMPLUS is to be mixed with water for use. Add no other substances to the concentrate or mix unless approved by Cimcool Technical Services (513-841-8133).

RECOMMENDED CIMCOOL MIX MASTER PROPORTIONER

TIP SIZES

Dilution	1:100 (1.0%)	1:120 (0.8%)	1:150 (0.7%)
Tip Size	60	64	66

After installation of the tip, titrate the mix to be sure the concentration is correct.

For concentration analysis, use the CIMPLUS Permanganate Titration Procedure.

Because the importance of rust control varies from job to job, the above dilutions may be made leaner where rust control is not a large problem, or can be made richer where rust control is difficult.

TYPICAL
PHYSICAL
AND
CHEMICAL
<b>PROPERTIES</b>

Physical state	liquid
Appearance and odor clear;	
Colors available undyed, g	
Solubility in water	
Weight, lb/gal, 60 °F (15.6 °C)	10.20
Specific gravity ( $H_2O = 1$ )	
Boiling point, °F (°C)	
Flash point, COC, °F (°C)	none
Fire point, COC, °F (°C)	none
Extinguishing media no fire hazard	
Unusual fire & explosion hazards none	
·	10 / 27 0
Freezing point (or pour point), °F (°C)	-10 (-27.0)
If frozen, thaw completely at room temperature.	40.0
pH, concentrate	
pH, 1:100 (1.0%) mix, typical operating conditions	
Total chlorine/chloride, wt %, calculated no	one/0.0025
Total sulfur, wt %, calculated	0.18
Phenols, phosphates, mercurials, PCB's, mineral oil, PTBBA	
· · · · · · · · · · · · · · · · · · ·	

#### PACKAGING

Available in 5-gallon pails, 55-gallon drums, Liqua Bins, and in tank truck and tank car quantities.

Do not reuse container before cleaning. After cleaning, remove label and relabel appropriately.

# DOT LABELING REQUIREMENTS

Hazardous Materials Description and Proper Shipping Name (49 CFR 172.101):

Not a hazardous material

Hazard Class (49 CFR 172.101):

Not applicable

^{*} Green and pink versions available in quantities of no less than 10 drums.

# **Product Safety Data**

CIMPLUS

#### **HEALTH HAZARD DATA**

Not for internal consumption.

**Emergency and First Aid Procedures:** 

Avoid prolonged contact with concentrate. Flush with water.

Eyes—

In case of contact with concentrate, flush with running water for 15

minutes. Call a physician.

Ingestion— If concentrate is swallowed, do not induce vomiting. Dilute with

water or milk. Call a physician.

Inhalation— No first aid required; concentrate not volatile.

The following toxicity tests were conducted in accordance with the techniques specified in the Regulations for the Enforcement of the Federal Hazardous Substances Act (16 CFR 1500.3, revised 1982).

Acute Oral Toxicity (LD₅₀—Rats)—

Above 5 g/kg for a 2% mix.

Acute Inhalation Toxicity (LC_{so}—Rats)—Above 20 mg/l for a 2% mix. Acute Eye Irritation (Rabbits)—

Negative for a 2% mix; no irritative or corrosive

effects.

Primary Skin Irritation (Rabbits)—

Negative for a 2% mix; noncorrosive and not a

primary skin irritant.

#### REACTIVITY DATA -

Stability-

Hazardous polymerization—

Incompatibility (materials to avoid)—

Stable.

Will not occur. /

Avoid contact of concentrate with

strong acids

What volatile products are given off if subjected

to open flame or abnormally high temperatures-Water vapor, carbon dioxide, and organic vapors.

#### SPILL OR LEAK PROCEDURES -

Steps to be taken if material is released or spilled— Flush with water.

Recommended disposal method(s)—

Ultrafiltration, acid-alumpolymer chemical treatment, or high temperature incineration.

#### SPECIAL PROTECTION INFORMATION

Respiratory Protection—

None required.

Ventilation-

No special requirements.

Protective Gloves—

Not required.

Eye Protection—

Safety goggles recommended when handling

concentrate.

Other Protective Equipment - Normal metalworking plant protective equipment.

#### SPECIAL PRECAUTIONS —

Handling and Storage— None required.

Precautionary Labeling-See product label. Product labels for use in shop available to bulk users.

Minor formulation changes or normal variations in the manufacture of this product may cause slight variances in the data presented on this sheet.

21-2M-A

Products Division | Cincinnati Milacron Marketing Company Cincinnati, Ohio 45209

#### ATTACHMENT I

CIMCOOL® products and metalworking fluid additives which would be classified as hazardous wastes under the provisions of the Resource Conservation and Recovery Act regulations if discarded in the concentrated, undiluted form.

PRODUCT	BASIS FOR HAZARDOUS WASTE CLASSIFICATION
CIMGUARD® 10	Flash Point Less Than 140°F
CIMGUARD 20	Flash Point Less Than 140°F
CIMGUARD 61	Flash Point Less Than 140°F
*CIMCLEAN® 10	pH 12.5 or higher
*ADDITIVE F	pH 12.5 or higher
*ADDITIVE MC	pH 12.5 or higher
*ADDITIVE LC	pH 12.5 or higher
*INHIBITOR 68	pH 12.5 or higher
*INHIBITOR C	pH 12.5 or higher
*WATER CONDITIONER V	pH 12.5 or higher

*When added to water or diluted CIMCOOL metalworking fluid at the recommended dilution, these materials are no longer classified as Hazardous Wastes.

J. T. DAKER CHEMICAL CO. 222 RED SCHOOL LAME, PHILLIPSBURG, NJ. 08865 MARTERIAL SAFETY OATA SRFET 24-400R EMERGENCY TELEPHONE -- (201) 459-2151

UHEMTYFO & (800) 424-9300 -- MATIBUAL PESPOMSE CENTER & (800) 424-8302

SITRIC ACID. MONDHYDRATE 04730 -01 SPRECTIVE: 03/11/08

PAGE: 1 ISSUED: 04/17/86

SECTION I - PRODUCT JOENTIFICATION

PRODUCT RAME:

CITRIC ACID. MONTHYDRATE

FURNIJEA:

HOC (CLUE) (CHICOOH) 2 M20

SUKBULA WI: CAS NO. :

117-14 03348-27-1

CUMMON SYNUTYAS:

PTARGYHONDH .. GIDA DIJYXOR RADIRT--VARRAY 6:4:1-YXC/CYE-C

PRUDUCT CODES:

0113,0120,0119,0110

PRECAUTIONARY EARRELLING

BAKER SAF-T-DATA(Th) SYSTEM

MEDITE.

MES STABLETTY 1

REACTIVITY

CUNTACT

LABORATORY PROTECTIVE EDUTAMENT

SAFETY GLASSES; LAR COAT

PRECAUTIONARY LABBL STATEMENTS

CAUTION

'AY CAUSE IRRITATION

DURING USE AVOID CONTACT WITH EYES, SKIN, CLOTHING. WASH THOROUGHLY AFTER

HANDLING. WHEN NOT IN USE KEEP IN TIGHTLY CLOSED CONTAINER. 

SECTION II - HAZAROOUS COMPONENTS

COMPOSENT CAS NO.

CITKIC ACID, MONOHYDRATE

05949-29-1

N/A

MIA

SECTION III - PHYSICAL DATA

VAPOR PRESSURE(MM HG): N/A BOILING POINT: N/A

MELTING POINT: -: • / A

SPECIFIC GRAVITY: 1.54

EVAPORATION RATE:

VAPOR DEMOITY(AIR=1):

(EUTYL ACETATE=1)

SOLUBILITY(H20):

(H2J=1)

APPRECIABLE (HORE THAN 10 %) % VOLATILES BY VOLUME: 0

APPEARANCE & UDOR: HITS, ODURLESS PINDER.

CONTINUED IN PAGE:

J. T. BAKER CHEMICAL CO. 222 RED RUMODE LINE, PHILLIPSBURG, MJ 08865 MATERIAL SAFETY DATA SAFET 24-HOUR 61E%GFNCY TELEPHONE -- (201) 859+2151

CHE 1TREC # (800) 424-930) -- MATITIAL RESPUESE CEMTER # (300) 424-8802

64739 **-**J1 EFFECTIVE: 03/11/86 SITRIC ACID. "ONDHYDRATE

PAGE: 2 TSSMED: 04/17/86

SHUTTUI IV - FIRE AND BAPLOSI H HAZARD DATA

FLASH POINT: A/A

FIRE EXTINOUISHING MEDIA

USE WATER SPRAY, CAPBRY PIATANTON, PROINCRY FRAM.

SPECIAL FIRE-FIGHTING PROCEDURES

FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPAKATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE

TUXIC GASES PRODUCED

CAREON AGRICATION, CARDON DIDXIDE

STOTION V - HEALTH HAZARD DATA

TOXICITY TEST RESULTS ARE LISTED FOR THE ANHYORDUS SUBSTANCE.

LOSU (GRAL-RAT) (G/KG) TOXICITY:

LUSU (IPR-PAT)(MG/KG)

L050 (SCU-RAT)(49/KG)

ED50 (GRAL-MOUSE)(MG/KG)

11.7

a83

5500 5040

EFFECTS OF OVEREXPOSURE

JUST MAY IRRITATE MOSE AND THROAT.

DUST MAY CAUSE HEADACHE, COUGHING, MIZZINESS OR DIFFICULT BREATHING.

DUST MAY IRRITATE OF FURN MUCOUS MEMBRANES.

CONTACT WITH SKIN OR EYES MAY CAUSE IRRITATION.

EMERGENCY AND FIRST AID PROCEDURES

IF SHALLDHED AND THE PERSON IS CONSCIOUS. IMMEDIATELY GIVE INGESTION:

LARGE AMOUNTS OF WATER. GET MEDICAL ATTENTION.

INHALATION: A PERSON BREATHES IN LARGE AMOUNTS, MOVE THE EXPOSED

PERSON TO FRESH AIR.

& IMMEDIATELY FLUSH HITH PLENTY OF WATER FOR AT LEAST 15 EYE CONTACTS

# MINUTES. GET MEDICAL ATTENTION.

IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 SKIN CONTACT:

MINUTES.

SECTION VI - REACTIVITY DATA

HAZARDOUS POLYMERIZATIOM: WILL NOT OCCUR

STABILITY: STABLE

INCOMPATIBLES:

STROMS BASES. ALKALI METALS. ORGANIC ACIDS.

DXTUES OF SULFUR

DECOMPOSITION PRODUCTS: CARBOY MONOXIDE, CARPON DICKIDE

CONTINUED DY PAGE: 3

J. [. MAKER CHRMICAL CO. 222 RED ACHOOL LAME. PHILLIPSOURG. NJ 08965
MATE DIAL SAFETY DATA SHEET
24-HOUR EMERGERY TELERMONE -- (201) 859-2151

CHEMITRES # (800) 424-4300 -- HATIO NE RESPONSE CENTER # (800) 424-8302

04730 -01 cFFE0TIVE: 03/11/85 STARRYHOURS + FIDA SIRTS

PAGE: 3 ISSUED: 04/17/86

SPUTION VII - SPILL ARE LISPOSAL PROCEDURED

STERS IN UR TAKEN IN THE EVENT OF A SPELL OR RESCHARGE

WEAR SUITABLE PROTECTIVE CLOTHING. CARDEULLY SWEEP MR AMO REMOVE.

DISPUSAL PROCESURE

DISPOSE IN ACCUPUATOR WITH ALL APPLICABLE REDERAL. STATE, AND LOCAL

SECTION VILL - PROTECTIVE COULPMENT

VenTILATION:

USE NOTOWATE GENERAL OR LOCAL EXHAUST VENTILATION TO KEEP FUME ON DUST LEVELS AS LOW AS POSSIBLE.

RESPIRATORY PROTECTIONS

NINE REQUIRED WHERE ADEQUATE VENTILATION .

COMOUTIONS EXIST. IF AIRPORNE CONCENTRATION IS

WIGH. USE AN APPROPRIATE RESPIRATOR OR DUST MASK.

EYE/SKIN PROTECTION:

SAFETY GLASSES WITH SIDESHIELDS, MITRILE GLOVES

RECOMMENDED.

SECTION IX - STORAGE AND HANDLING PRECAUTIONS

SAF-T-DATA(TM) STOPAGE COLOR CODE: DRANGE

SPECIAL PRECAUTIONS

REEP CONTAINER TIGHTLY CLOSED. SUITABLE FOR ANY GENERAL CHEMICAL STORAGE

AR EA.

SECTION X - TRANSPORTATION DATA AND ADDITIONAL IMPORMATION

------

DOMESTIC (D.O.T.)

PROPER SHIPPING NAME

CHEMICALS. N.C.S.

INTERNATIONAL (I.M.O.)

PROPER SHIPPING NAME

CHEMICALS, N.D.S.

(TM) AND (R) DESIGNATE TRAJEMARKS.

N/A = MOT APPLICABLE OR NOT AVAILABLE

THE INFORMATION PUBLISHED IN THIS MATERIAL SAFETY DATA SMEET HAS BEEN COMPILED FROM OUR EXPERIENCE AND DATA DRESENTED IM VARIOUS TECHNICAL PUBLICATIONS. IT IS THE USER'S RESPONSIBILITY TO DETERMINE THE SUITABILITY OF THIS INFORMATION FOR THE ADOPTION OF NECESSARY SAFETY PROGRAMMENTS. WE PESERVE THE RIGHT TO REVISE MATERIAL SAFETY DATA SHEETS PERIODICALLY AS NEW INFORMATION PECOMES AVAILABLE.

"CLEANEGG"

REVISION #1 - FEBRUARY 3 1986



THE LEA MANUFACTURING COMPANY
World Headquarters: 237 East Aurora St., P.O. Box 71,
Waterbury, CT. 06720 Tel.: (203) 753-5116 Cable Address LEACO

#### MATERIAL SAFETY DATA SHEET

This material safety data sheet contains all available pertinent information to enable you to comply with Title 29 CFR Hazard Communication Program, and environmental regulations, by identifying any material which may be a health hazard or contribute hazardous characteristics to a waste stream, thereby enabling you to properly follow all regulations, including storage, labeling and disposal of its waste. Unless specifically indicated on this sheet, our product:

- A. Is not an oxidizer
- B. Is not potentially explosive
- C. Does not react violently with water
- D. Is not corrosive as defined in 49 CFR
- E. Does not have a flash point less than 60° C (140° F)
- F. Does not generate toxic gases when mixed with water
- G. Does not promote any Target Organ Effects in the workplace
- H. Does not cause reversible inflammation on the skin as an Irritant

  I. Does not cause substantial allergic reactions on the skin, Sensitizer
- I. Is not Highly Toxic or Toxic as defined in NIOSH from animal studies
- K. Does not contain any carcinogen as regulated by IARC, NTP, or OSHA
- L. Does not contain any toxic organics as defined in 40 CFR parts 413 & 433

M. Does not contain any of the following:

Arsenic Barium Cadmium Chromium Lead Mercury Nickel Selenium Sulfur
Sliver
Cyanide
Phosphates
Chelating Agents
Any other heavy metal
Halogenated Solvent
Non-halogenated Solvent

# SECTION 1 PRODUCT IDENTIFICATION FOR THE FOLLOWING GREASELESS OR LEA COMPOUND MIXTURES:

A, A-17, B, B-31, C, Cleanegg, HD-8, HD-12, HD-15, HD-18, HD-20, HD-30 JR, L, LM-8, LM-12, LM-15, LM-18, LM-20, LM-24, LM-32 LRB-8, LRB-12, LRB-15, LRB-18, LRB-20, LRB-24, LRB-32 LRP-8, LRP-12, LRP-15, LRP-20, LRP-24 LTPL-12A, LTPL-15A, LTPL-18A, LTPL-20A, LTPL-22A, LTPL-24A OR-20H, PL-8A, PL-12A, PL-15A, PL-18A, PL-24A, PMC-3022-1 Q, R-8, R-12, R-15, R-18, R-20, R-24, R-30 RW-8, RW-12, RW-15, RW-18, RW-20, RW-22, RW-24, RW-32, S-12, S-20, S-24 1-A-5, 4F, 13, 15CE, 80A, 96, 120A, 150A, 170A, 180A, 200A, 220A, 240A Coarse, Medium

Buffing or Polishing Compounds are designed to be applied to a rotating buffing wheel for the removal or flowing of the surface of metals, plastics or wood. According to Department of Transportation Regulations, this material is considered non-hazardous and non-toxic in shipping and storage.

SHIPPING NAME NMFC #48580 - Scouring Compounds, NOI. (cake form or liquid)
NMFC Class 55 for LTL - Class 35 for truckload
U.S.Export Commodity #492.1540 - Polishing Compound



#### SECTION 2 HAZARDOUS INGREDIENTS OR IDENTITY

FOLLOWING ARE THE INGREDIENTS CONTAINED IN OUR MIXTURES (COMPOUNDS). THE CHEMICAL ABSTRACT SERVICE NUMBERS (CASE) AND TLY ARE LISTED FOR CONSTITUENTS THAT ARE REGULATED ACCORDING TO ALL CURRENT "RIGHT-TO-KNOW LAWS.

#### SECTION 3 PHYSICAL AND CHEMICAL CHARACTERISTICS

Solid dense brick or creamy liquid with mild odor. Specific Gravity more than 1.2. Solubility in water for liquids partial.

#### FIRE EXPLOSION DATA:

Flash point over 350° F. Auto ignition temp.. 300° C. Flammable limits not applicable.

When product is subjected to abnormally high temperatures, carbon monoxide may be formed.

In case of fire, use water fog, dry chemical or carbon dioxide. Water may cause violent frothing requiring full facepiece and self-contained apparatus.

NATIONAL FIRE PROTECTION ASSOCIATION

HAZARD RATING
4 - EXTREME
3 - HIGH
2 - MODERATE
1 - SLIGHT
0 - INSIGNIFICANT

FIRE

O O REACT.

SPECIAL

#### SECTION 4 PHYSICAL HAZARDS (REACTIVITY DATA)

Material is stable and hazardous polymerization will not occur. Incompatibility exists with strong alkalies like sodium hydroxide.

#### SECTION 5 HEALTH HAZARD DATA

TLV (Total mass for dust while using) 10.0 mg/M³

In case of contact with eyes, rinse with plenty of water for at least 15 minutes. Wash skin with soap and water. If swallowed, induce vomiting by sticking finger down throat. Never give anything to anyone unconscious or suffering convulsions.

#### SECTION 6 SPECIAL PROTECTION INFORMATION

When material is being used, suitable exhaust equipment is required with eye protection, clothing and gloves to prevent compound dust or materials being removed during the buffing operation from entering the nose, throat or skin of the buffer.

The U.S. Department of Health, Education & Welfare - National Institute for Occupational Safety & Health (NIOSH) has publications to assist in maintaining a safe environment as:

Abrasive Metal Finishing, Item 1733-00122-7, U.S. Printing Office, Wash., DC 20402

Ventilation Requirements for Grinding, Polishing & Buffing #277-332/3. National Technical Information Service, Springfield, VA 22161

Industrial Ventilation - A Manual of Recommended Practices. American Conference of Governmental Industrial Hygenists, P.O. Box 16153, Lansing, MI 48901.

#### SECTION 7 SPECIAL PRECAUTIONS

Keep out of sun and away from heat. Keep liquids and paste from freezing. Prevent cartons and fibre drums from excessive moisture. Empty containers retain product residues, therefore do not reuse containers without reconditioning. Put nothing else in container with product.

#### SPILL PROCEDURE AND WASTE DISPOSAL TREATMENT

In case of spill, sweep material into containers. Buffing wheel wastes may contain wheel lint which is combustible. Dispose of in accordance with regulations.

### APPLICATION GUIDE FOR USING CLEANER NO. 10 CONCENTRATE

#### GENERAL NOTES:

- 1. IMPORTANT. When using CLEANER NO. 10 in old containers or tanks, be certain to throrughly remove old solvents by rinsing at least 3 times with fresh CLEANER NO. 10, otherwise offensive odors will result from the water mixing with the solvents.
- 2. CLEANER NO. 10 will work faster and more efficiently when heated to 120 F. This temperature is recommended for removal of heavy soils, floor stripping, and machinery cutting oils. Can be used up to 180 F, but some discoloration of aluminum, copper and brass may result.
- 3. CLEANER NO. 10 is safe (when properly diluted) for all metals and materials including Aluminum, Brass, Ceramic, CR Steel, Enamel, Forgings, Glass, Linoleum, Magnesium, Paints*, Stainless Steel, Tiles.
- *As with any cleaner, always test on small area for proper dilution.
- 4. If surface is to be painted, wipe dry or rinse with fresh water after cleaning.
- 5. To reduce flash rusting on iron and steel, do not rinse CLEANER NO.  $10~\rm from~bare~metals$ . For additional rust inhibiting, order "CLEANER NO. 10RI".
- $6. \,$  Always allow time for cleaners to soften soils before wiping or rinsing. Let the cleaner do the work you paid for.
- 7. For hard-to-remove soils, or where time is of the essence, heating, scrubbing, agitation, or circulation of the cleaner will always increase the cleaning action. Call factory to find out about Cleaning Tanks with built-in heating and circulation.
- 8. For certain extremely heavy greasy or soiled conditions, CLEANER NO. 10 may be used full strength.
- 9 For applications where foam may be undesirable (floor scrubbers, agitating mixers, power washers, etc.), specify "CLEANER NO. 10LF".
- 10. When using CLEANER NO. 10, do not "wet down the surface" with water first. This dilutes the Cleaner. It also wastes water and your time. CLEANER NO. 10 has wetting agents which are far more efficient at wetting the surface. Apply CLEANER NO. 10 first, allow to work, and then rinse off with water to get your clean surfaces.
- ll. Call your CLEANER NO. 10 Representative, or the factory, for newest application information which could save you time and money. Because of the high concentration of CLEANER NO. 10, the dilution rates will probably not be the same as with your present cleaner.

OVER 032086

## INDUSTRIAL GUIDE FOR USING CLEANER NO. 10 CONCENTRATE

GENERAL BUILDING MAINTENANCE:
Heavy Floor Grease, Stubborn Stains, Shower Room Tiles, Rug Spotting
Floor Wax Stripping
Walls, Desks, Floors, Lavatories, Sinks, Dishwashing, Tiles, Furniture, Cafeterias, Tables, Toilets, Fixtures, Counters50:1
Glass, Windows, Mirrors, Ornamental Metals85:1
PRODUCTION DEPARTMENT:
Metals in Production Machining: Heavy brown cutting oil removal*l:l Water soluble cutting oil removal5:l
Printed Circuit Boards: Flux, ink removal*1:1
Computer Keyboards (ink removal)*1:1
Lapping Compound: Thoroughly removes from metals, glass, plastics*1:1
Ultrasonic Cleaning, Spray washersup to 20:1 For Low Foam, specify "CLEANER NO. 10LF".
Pre-clean for Plating
Vibratory and Tumbling Lubricantto 500:1
NOTE: CLEANER NO. 10 can absorb oils up to 100% of its volume. When this is reached, allow to stand several hours. Oil separates and rises to top. Skim off oil or centrifuge and reuse or dispose as an "oily waste". Remaining CLEANER NO. 10 can be reused or disposed down drain. See local regulations. Add new solution as needed.
MACHINE SHOP MAINTENANCE:
Heavy Grease, Floors, Machinery, Transmissions, Pumps*
Oils on Machines, Production Equipment, Hand Tools, Tool Kits5:1
Flushing Cutting Oil/Coolant Systems5:1
Washing Hands10:1
Steam Cleaning (Clayton Hydro):
VEHICLE/AUTOMOTIVE MAINTENANCE:
Engines, Transmissions: Apply full strength; wait 5 minutes; flush with cold or hot water or pressure washer. No need to steam clean.
Pressure Washers20:1
Interiors: Rugs, Dashboards, Upholstery, Vinyl, Leather10:1
Exteriors: Hand or Pressure Wash, Windows200:1
Whitewalls, Greasy Spots, Wire Wheelsfull stength (Safe for Aluminum)
SPECIAL APPLICATIONS:
Ship Bilges
Demousl of manage backing on mlastic (Dlawigles) shoots both old and
Removal of paper backing on plastic (Plexiglas) sheets both old and newbrush on or soak full strength; allow to stand 1/2 hour; slowly peel paper off.

^{*} may require agitation, circulation or heating of the cleaning solution. Consult factory for available Cleaning Tanks.

OVER 021886

CLEANER #10



Food Safety and Inspection Service Science
Building 306, BARC-East
Beltsville, MD 20705

February 28, 1985

Mr. Allen J. Cohen Sky Products Co. 110 Goodale Street Peabody, MA 01960

Dear Mr. Cohen:

This is in reply to your request for compound authorization received on January 16, 1985.

Your product Cleaner No. 10 is acceptable as a floor and wall cleaner for use in official establishments operating under the Federal meat, poultry, shell egg grading, and egg products inspection programs.

Before using this compound, food products and packaging materials must be removed from the room or carefully protected. After using this compound, surfaces must be thoroughly rinsed with potable water.

Acceptance of this compound by this Department is in no way to be construed as an endorsement of the compound or of any claims made for it.

If any change is made in the labeling information or formulation, the authorization for use in official plants becomes void immediately.

Sincerely,

Charles R. Edwards, Chief

Product Safety Branch

Food Ingredient Assessment Division

ELLEN R. MARDER SALES SPECIALIST 800-402-0444

755 - 015

SKY PRODUCTS CO. 110 GOODALE STREET PEABODY, MA 01960

(617) 535-4545

# As of now, all other cleaners are obsolete.

A SAFETY REPORT ON HAZARDOUS AND NON-HAZARDOUS CLEANERS

CLEANER

NO. 10®

TODAY'S CHALLENGER

0908-1874

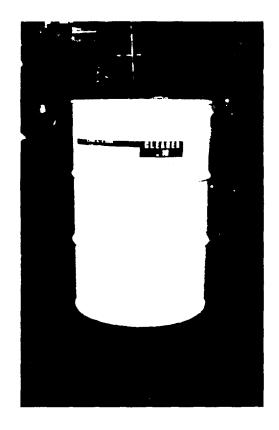
#### A NOTE TO CONSUMERS

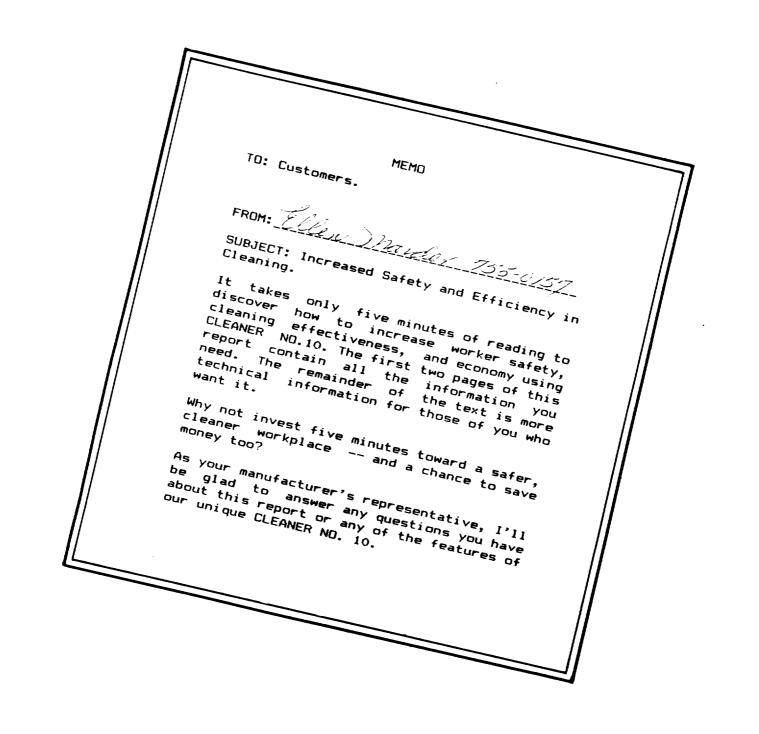
The makers of CLEANER NO. 10 are dedicated to continued improvement of their product and services. We sincerely invite comments about your experiences with cleaning and degreasing tasks. This information will enable us to continue to meet the cleaning needs of Commerce and Industry with the safest, most effective and most economical cleaning product available today.

Send comments or requests for information to:

SKY Products Co. 110 Goodale Street Peabody, MA 01960

Phone: 617-535-4545





#### WHAT IS THE PURPOSE OF THIS REPORT?

The purpose of this Report is to inform the reader about industrial hazards that employees are often needlessly exposed to in the workplace. It will also show how a new scientific discovery will reduce overall exposure to these hazards and simultaneously reduce operation costs in the areas of cleaning and degreasing.

WHAT IS WRONG WITH OTHER CLEANERS?

1

They are highly hazardous, endangering your health. Until now, none of the cleaners that were safe to use would really do a good job in cleaning and grease removal. Because caustics, butyls and other solvents are inexpensive for manufacturers, they are widely used in cleaning products. These ingredients can cause serious long-term dangers to the user's health, as you will see in this Report.

They can be fire hazards. Many petroleum based cleaners are flammable at low temperatures, adding an unnecessary fire hazard to your premises. To reduce this hazard requires a separate storage area for flammable cleaners. Despite this precaution, you pay higher insurance rates when these flammable materials are on your property.

They are costly to dispose. After solvent based cleaners become loaded with grease and oils, they must be stored in a separate, secured area and a costly disposal company must be called in to carry these materials away. They are then either burned, (contaminating our air) or dumped in hazardous waste sites (which then contaiminate the ground and drinking waters).

They have limited effectiveness. Most cleaners won't work on a wide range of applications. Manufacturers think they can sell more product by making you buy a special product for each cleaning job. Maintenance costs and storage problems increase when you carry a large variety of cleaners in your inventory.

HOW DO I KNOW IF MY PRESENT CLEANERS ARE HAZARDOUS?

Very easy. First, look at the label. If it says it contains any of the hazardous materials such as caustic, petroleum distillates, chlorinated solvents, acids, metasilicates, alcohols, or others listed on page 8 of this Report, then you know it is hazardous.

Next ask for and get the Material Safety Data Sheet (MSDS). By law, you are entitled to see an MSDS for every product you use. See your supervisor or contact the manufacturer directly. Look especially at Section II of the MSDS and note the reference to any hazardous materials.

IS THERE A SOLUTION TO THESE PROBLEMS?

Yes.

As a direct result of a serious industrial accident, a safer high-efficiency cleaner was developed——CLEANER ND. 10. Wide acceptance by many of the Fortune 500 companies have repeatedly proven CLEANER NO. 10 can replace many of the hazardous cleaners and degreasers now being used.

0908-1877

Material Safety Data Sheet May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

#### U.S. Department of Labor

Occupational Safety and Health Administration (Non-Mandatory Form)



Form Approved OMB No. 1218-0072 IDENTITY (As Used on Label and List)

CLEANER NO. 10; 10LF; 10RI		information is available, the space must be marked	applicable, or no to indicate that.
Section I			
Manufacturer's Name Sky Products Co.		Emergency Telephone Number (617) 535-4545; (617) 633-79	88
Address (Number, Street, City, State, and ZIP Code) 110 Goodale Street		Telephone Number for Information (617) 535-4545	
Peabody, MA 01960		Date Prepared 23 August, 1986	
		Signature of Preparer (optional)	Sign Marketine
Section II — Hazardous Ingredients/Identit	y Information		
Hazardous Components (Specific Chemical Identity; Cor	nmon Name(s))	OSHA PEL ACGIH TLV Recommended	% (optional)
		n Massachusetts "Right to Kno	)W [#]
Substance List.			
1. Considered "non-toxic	". When a	nimal tested in accordance wi	th
-	_	dose of 5000 mg/kg (ten time	•
allowable dose) produ	ced no fa	talities. All animals gained	weight.
22 When tested in accorda	ance with	16CFR1500.42, Eye Irritation	, there
was initial irritation no flushing.	n, but al	1 was cleared up by 72 hours	with
3. Test Reports available	e on requ	est from factory.	<del></del>
	<u>.</u>		
	<del>- :</del>	<del></del>	<del></del>
		,	<del></del> _
Section III — Physical/Chemical Characteri	istics		
Section III — Physical/Chemical Characteri Boiling Point	<del>                                     </del>	Specific Gravity (H ₂ O = 1)	
Boiling Point	210°F		1.12
<del></del>	<del>                                     </del>	Specific Gravity (H ₂ O = 1)  Melting Point	1.12 25°F
Boiling Point	210°F	Melting Point  Evaporation Rate	25°F
Vapor Pressure (mm Hg.)  Vapor Density (AIR = 1)  Solubility in Water	210°F	Melting Point	25°F
Vapor Pressure (mm Hg.)  Vapor Density (AIR = 1)  Solubility in Water	210°F	Melting Point  Evaporation Rate	25 ⁰ F
Vapor Pressure (mm Hg.)  Vapor Density (AIR = 1)  Solubility in Water	210°F 17.3	Melting Point  Evaporation Rate (Butyl Acetate = 1)	25°F
Soiling Point  Vapor Pressure (mm Hg.)  Vapor Density (AIR = 1)  Solubility in Water  100% complete  Appearance and Odor  Clear, blue liquid;	210°F 17.3 > 1  pleasant	Melting Point  Evaporation Rate (Butyl Acetate = 1)	25°F
Japor Pressure (mm Hg.)  Japor Density (AIR = 1)  Solubility in Water  100% complete  Appearance and Odor  Clear, blue liquid;  Section IV — Fire and Explosion Hazard D	210°F 17.3 > 1 pleasant	Melting Point  Evaporation Rate (Butyl Acetate = 1)	25°F < 1 pH=10.5
Japor Pressure (mm Hg.)  Japor Pressure (mm Hg.)  Japor Density (AIR = 1)  Solubility in Water  100% complete  Appearance and Odor Clear, blue liquid;  Section IV — Fire and Explosion Hazard D  Flash Point (Method Used) None (COC); non-flammabl  Extinguishing Media Not applicable; non-flam  Not applicable; non-flam	210°F 17.3  > 1  pleasant oata e mable	Metting Point  Evaporation Rate (Butyl Acetate = 1)  cltrus odor	25°F < 1 pH=10.5
Vapor Pressure (mm Hg.)  Vapor Density (AIR = 1)  Solubility in Water  100% complete  Appearance and Odor Clear, blue liquid;  Section IV — Fire and Explosion Hazard C  Flash Point (Method Used) None (COC); non-flammabl  Extinguishing Media	210°F 17.3  > 1  pleasant oata e mable	Melting Point  Evaporation Rate (Butyl Acetate = 1)  Citrus odor  Flammable Limits , LEL none	25°F < 1 pH=10.5
Vapor Pressure (mm Hg.)  Vapor Density (AIR = 1)  Solubility in Water  100% complete  Appearance and Odor Clear, blue liquid;  Section IV — Fire and Explosion Hazard D  Flash Point (Method Used) None (COC); non-flammabl  Extinguishing Media Not applicable; non-flam	210°F 17.3  > 1  pleasant oata e mable	Melting Point  Evaporation Rate (Butyl Acetate = 1)  Cltrus odor  Flammable Limits , LEL none	25°F < 1 pH=10.5
Vapor Pressure (mm Hg.)  Vapor Density (AIR = 1)  Solubility in Water  100% complete  Appearance and Odor Clear, blue liquid;  Section IV — Fire and Explosion Hazard D  Flash Point (Method Used) None (COC); non-flammabl  Extinguishing Media Not applicable; non-flam	210°F 17.3  > 1  pleasant pata e mable mable	Melting Point  Evaporation Rate (Butyl Acetate = 1)  citrus odor  Flammable Limits . LEL none	25°F < 1 pH=10.5

∩94 174, Sept. 1985

#### CLEANER NO. 10

Section V -	Reactivity Data	 ì			
Stability	Unstable		Conditions to Avoid	v stable.	
	Stable	X	NOTICE OFFERENCES	, 5101251	
Incompatibility	(Materials to //void)	_1	None.		
Hazardous Deco	mposition or Byprodu	ucts	None.		
Hazardous Polymerization	May Occur	T	Conditions to Avoid		
rolymonzalion	Will Not Occur	X	None.		<del></del>
Section VI -	- Health Hazard				
Route(s) of Entry	r: Inha	alation?	Skin?		Ingestion?
Aouter	Temporary	eye n II	irritation from dir on reverse page.	ect contact wit	th undiluted product.
Chronic	: None kno	wn.	· ·		
Carcinogenicity:			IARC Mo	ographs?	OSHA Regulated?
As dete	rmined by	anal	ysis of data suppli	ed by component	manufacturers.
Signs and Symp	toms of Exposure	irr	itation. Large amou	nt swallowing o	causes stomach upset.
Long-tim	e skin exp	osui	e may cause tempora	ry redness.	
Medical Condition	ons vated by Exposure	Sple	shes in eye will ca	use eye irritat	tion.
					ection II on reverse
<del></del>					
				them Dradwat 1	s completely soluble
<u>F</u>	rlush with	Wate	er into drainage sys	t local author	ities.
F	lush with	wate	er into drainage system of the in water. Consul	tem. Product 1:	s completely soluble ities.
			·····		
					ill be affected. Use
			<del></del>		
	Stable   X   None: chemically stable.				
Respiratory Pro	Not norma	lly :	needed.		
Ventilation	Not normal Mechanical (General	ral)	needed.	None. Other	
Protective Glove	es	_		Protoction	d as with all cleaners
		ent			
Work/Hygienic	Practices			ld always be ob	served.
			Page 2		# U.S.G.P.O.: 1986-491-529/45775

WHAT IS CLEANER NO. 10?

It is proven, multi-function cleaner and degreaser in concentrated form. It is safer for your health and more economical than other cleaners. Depending on your particular job, you add water to get the lowest possible operating cost. For example, a mixture of 300 parts water (less than 1 tablespoon in a gallon) will do many light cleaning tasks. Full strength, CLEANER NO. 10 will remove the heaviest grease and soils, but still pose no hazard to the user.

WHAT MAKES CLEANER NO. 10 SO GOOD?

CLEANER NO. 10 solves most of the problems and eliminates the dangers caused by other cleaners.

It is non-hazardous, according to the current requirements of OSHA (Occupational Safety and Health Administration).

It is non-flammable, will not burn at any temperature.

It is biodegradable, making disposal easier, even in the face of strict EPA (Environmental Protection Agency) and local laws.

DOES THE SAFER CLEANER NO. 10 COST MORE?

No. In fact it is usually less costly when properly diluted, than most other cleaners.

HOW DO I KNOW THAT CLEANER NO. 10 WILL WORK FOR ME?

You don't. That's why the makers of CLEANER NO. 10 offer a no-risk, money back plus guarantee. Use CLEANER NO. 10 for 30 days. If you are not satisfied with it as the best overall cleaner you have ever used, ship it back. We will pay all shipping costs and give you a full refund.

ARE THERE JOBS THAT CLEANER NO. 10 WILL NOT DO?

Yes. Hazardous cleaners are used in industry on extremely stubborn soils. The safer CLEANER NO. 10 may take more time than you are willing to spend to remove these soils. However, the health and economical benefits using CLEANER NO. 10 may offset the extra time that may be needed on these unusual cleaning problems.

Cleaning conditions vary. That's why we offer our full satisfaction guarantee. It lets you try CLEANER NO. 10 in your own place under your own conditions.

CONCLUSION.

TIRED OF TRADING SAFETY FOR EFFECTIVENESS?

Switch to CLEANER NO. 10 and get:

*Safety

*Effectiveness

*Economy

*Ease of disposal

See for yourself: take advantage of our full service guarantee to try CLEANER NO. 10 for 30 days. If not completely satisfied, return the unused portion. We will gladly give you a full refund and reimburse all shipping costs.

#### GUARANTEE CERTIFICATE

If not satisfied after using CLEANER NO. 10 for 30 days, return the unused portion for a refund of the full purchase price. The makers of CLEANER NO. 10 will also assume all shipping costs.

This is a full service guarantee with no restrictions — not a limited warrantee as offerred by most manufacturers.







Officials, wearing protective gear, tour a contaminated area of a town where a high incidence of cancer and leukemia were thought to be related to well water polluted by hazardous waste dumping.

Whenever you store or use or dispose of a hazardous chemical, a spill has drastic consequences. If a leaking drum hospitalized three policemen, and disposal threatened the health and lives of an entire community, what could the chemicals used in your business do to you and your employees?

THINK...and use non-hazardous CLEANER NO. 10.



A single leaking drum of this hazardous chemical spill hospitalized three policemen called in to investigate the spill. Firefighters had to wear full protective gear and respiratory masks to remove the drum.

Occupational Safety and Health Administration MATERIAL SAFETY DATA SHEET

U.S. DEPARTMENT OF I ABOR

Form Approved OM# No. 44-R1367

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SEC	ION I	
MANUFACTURER'S NAME Sky Products Co.	EMERGENCY	TELEPHONE NO.
ADDRESS (Number, Street, City, State, and ZIP Code)	·	
CHEMICAL NAME AND SYNONYMS	TELEANER NO. 19	NYMS
CHEMICAL FAMILY Detergent Cleaner	FORMULA Proprietary	

SECTION	411 -	HAZAF	RDOUS INGREDIENTS		
PAINTS, PRESERVATIVES, & SOLVENTS	*	TLV (Units)	ALLOYS AND METALLIC COATINGS	*	TLV (Unite)
PIGMENTS		<u> </u>	BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES	$\perp$		OTHERS		
OTHERS					
HAZARDOUS MIXTURE	S OF	OTHER LI	DUIDS, SOLIDS, OR GASES	×	TLV (Units)
This product contains	s no	mate	rials classed as hazardous_	"Т	LV"
			rials listed in the Massach	) B e	tts
"Toxic and Hazardo	18 3	ubstai	nces List".		

SE	SECTION III - PHYSICAL DATA								
BOILING POINT (*F.)	226	SPECIFIC GRAVITY (H2O+1)			1.12				
VAPOR PRESSURE (min He.)	17.3	PERCENT, VOLATILE BY VOLUME (%)			85				
VAPOR DENSITY (AIR+1)	> 1	EVAPORATION RATE			< 1				
SOLUBILITY IN WATER	complete		ρН	=	10.5				
APPEARANCE AND ODOR Clear, b.	lue liquid;	pleasant lemon odor							

FLASH POINT (Method used)	SECTION IV - FIRE AND I	FLAMMABLE LIMITS	Lol	Uei
, , , , , , , , , , , , , , , , , , , ,	None (open cup)			
EXTINGUISHING MEDIA	Not applicable; no	on-flammable		
SPECIAL FIRE FIGHTING PR	Not applical	ole		
UNUSUAL FIRE AND EXPLO	SION HAZAROS None			

SECTION V - HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE Greater than 500 ppm
Prolonged contact with concentrate may result in slight redness
for short period of time.
EMERGENCY AND FIRST AID PROCEDURES  Eye contact-flush with water for 15 minutes, Call physician, Swallo give 2 glasses of water, induce vomiting. Call physician.
Skin contact-flush with water.

STABILITY	UNS	TABLE		CONDITION	15 TO AVOID	None	
	STA	BLE	Х				
INCOMPATABIL	ITY (Maie	riels to eroid)	Non	е			
HAZARDOUS D	ECOMPOS	TION PRODUC	TS No	ne			
HAZARDOUS		MAY OCCUR			CONDITION	s to avoid None	
POLYMERIZATI	ON	WILL NOT OCCUR		X	1		

STEPS TO	SE TAKE	N IN CASE	MATERI	AL IS RELEASED	OR SPILLED
Plush	with	water	into	drainage	system.
WASTE D	SPOSAL P	METHOD			
Flush	with	water	into	drainage	system.

	SECTION VIII - SPECIAL	PROTECTION	NINFORMAT	ON	
RESPIRATORY PI	None	·			
VENTILATION	LOCAL EXHAUST		SPECIAL	None	
	MECHANICAL (General) Satisfac	tory	OTHER	None	
PROTECTIVE GLO	Plastic or rubber	EVE PROTEC Safet	y Classes		
OTHER PROTECT	Eye Bath				

SECTION IX - SPECIA	AL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	None	
OTHER PRECAUTIONS	None	

PAGE (2) GF 0 9 30 -540

Form OSHA-20

Form OSHA-20 Rev. May 72

PAGE (1)

#### TLV COMPARISON CHART Source: American Conference of Governmental Industrial Hygienists SBN: 0-936712-54-6; 1985 SAFETY ZONE HAZARDOUS ZONE Carbon Tetrachloride (5) Napthalene (10) CLEANER NO. 10 Ammonia (25) has no hazardous Butv1 (25) chemicals. Hexane (50) Perchloroethylene (50) Its TLV is Trichloroethylene (50) well over 500 Methylene Chloride (100) Stoddard Solvent (100) which makes it Toluene (100) extremely safe. Turpentine (100) Methyl Alcohol (200) Methyl Ethyl Ketone MEK (200) ******** Petroleum Distillates (200) Gasoline (300) 1.1.1 Trichloroethane (350) Isopropyl Alcohol (400) CLEANER NO. 10

#### WHAT IS THE MSDS?

The Material Safety Data Sheet, sometimes called DSHA Form 20, must be prepared and furnished by every manufacturer of a product used today in the USA. By law, you are entitled to see a copy of this MSDS for every product you work with or are exposed to in your working area.

This sheet has several portions. Refer to the copy of the MSDS for CLEANER NO. 10 on page 7 of this Report.

Note especially Section II where all hazardous materials must be shown, along with their TLV numbers. See below for explanation of the TLV.

Note also the disposal procedures, the fire hazards, and spill or leak procedures. Knowledge of these items now could save your health or life later in an emergency.

WHAT SHOULD I KNOW ABOUT DECEPTIVE PRACTICES BEFORE READING THE MSDS?

Some manufacturers omit information in Section II and simply say "For further information consult the factory". Be suspicious if you see this—it may mean that there are hazards that the company would like to avoid discussing.

#### WHAT DOES "TLV" MEAN?

TLV is "Threshold Limit Value". and is usually associated with inhalation.

TLV is the concentration of substance vapor (expressed as "ppm" or parts per million) in air for a normal 8-hour workday, 40-hour workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect on health.

The more hazardous the substance, the less concentration is allowed, and therefore the TLV is lower.

OSHA classes any substance with a TLV less than 500 as "hazardous". A TLV greater than 500 is classed as "non-hazardous", such as CLEANER NO. 10.

Most chlorinated and petroleum based solvents have a TLV less than 500 and are therefore classed as "hazardous".

#### WHAT IS A HAZARDOUS SUBSTANCE?

This generally refers to a substance which causes a harmful reaction to the body from inhalation or skin contact, resulting in dizziness, fainting, death, disease, cancer (carcinogens), or burns.

#### WHAT DOES FLAMMABILITY MEAN?

A product is rated for flammability depending on its Flash Point (the temperature of the product at which it will ignite if exposed to a flame.)

Products with a Flash Point less than 20F (-7C) are classed as "Extremely Flammable". Flash Points between 20F (-7C) and 100F (38C) are classed as "Flammable". Flash Points of any temperature above 100F (38C) are classed as "Combustible".

A product having no Flash Point whatsoever, no matter how high it is heated, is classed as "Non-Flammable", such as CLEANER NO. 10.

#### WHAT DOES CAUSTIC MEAN?

A Caustic is a substance which burns or eats away by chemical action. Caustic Soda is Sodium Hydroxide (also known as Lye). Caustic Potash is Potassium Hydroxide. Even solutions as low as 1% of either of these caustics can eat away your skin by permanently destroying the keratin, or outer protective layer.

Permanent blindness is usually the result of even momentary eye contact with caustics.

WHY DO OTHER CLEANERS CONTAIN HAZARDOUS MATERIALS?

Beacuse they are inexpensive.

Manufacturers know that most users do not take the time to become aware of the dangers of these products.

They also take advantage of the fact that most users are under pressure to get the job done quickly and "who cares about the worker?".

#### WHAT DOES CLEANER NO 10 CONTAIN?

It is water-based and contains a scientific blend of emulsifiers, coupling agents, detergents, bubbling suds, specialized builders, surfactants, fragrances, and Certified FD&C colors.

Catalyst HITELV, a scientific blend of high efficiency ingredients enhances the cleaning power of CLEANER NO. 10.

Emulsifiers break dirt and grease into small particles.

Coupling agents allow grease and water molecules to combine so they can easily be washed away with plain water.

Detergents keep dirt and grease particles suspended in solution so they are completely removed. No oily film remains on the surface, and new dirt will not form so quickly. This allows a longer time between cleaning jobs.

Bubbling suds act as "automatic scrubbers". Each time a bubble breaks it scrubs off a little more grease and dirt. Thus CLEANER NO. 10 automatically reduces the need for scrubbing—saving your labor costs and time.

Specialized builders clean dirt from hard surfaces, reducing need for scrubbing. They also condition the water eliminating need for water softeners.

Surfactants are SURFace ACTive AgeNTS which lower the dynamic surface tension of your cleaning solution, making it wetter to penetrate fast, giving CLEANER NO. 10 the ability to work faster.

Coloring agent is added so you can see the dilution you are using for each job. Even though the amount of coloring agent is less than .005%, we use only FD&C agents as other agents are usually hazardous. Thus we guard your health all we can.

WHY DOESN'T CLEANER NO. 10 CONTAIN HAZARDOUS MATERIALS?

Because the makers of non-hazardous CLEANER NO. 10 have discovered a way to blend several non-hazardous substances in a way which produces the same effective cleaning power as the hazardous cleaners.

HOW CAN CLEANER NO 10 STILL BE PRICED COMPETITIVELY?

Because CLEANER NO. 10 is non-hazardous, the manufacturing methods do not require overly expensive, highly sophisticated, special safety equipment. Standard safety equipment suffices. Our insurance rates are also lower.

Because CLEANER NO. 10 almost sells itself, no expensive sales force pyramid is needed.

Your costs can likewise be lowered if you use CLEANER NO. 10 in place of hazardous cleaners starting now.

SINCE TOXINS (POISONOUS SUBSTANCES)
CAN CAUSE HARM, WOULDN'T I BE SAFE
USING WEAKER SOLUTIONS?

Surprisingly, scientific literature reports the opposite. According to scientist Sherridan Stock in New Scientist (October 2, 1980), "Low level exposure to a toxin can sometimes be more toxic than exposure to a higher level of the same toxin, possibly because the higher dose kills target cells instead of setting pernicious metabolic events in train."

#### YOU'VE READ THE FACTS.

Now, see for yourself. Take advantage of our no-risk guarantee. Try non-hazardous CLEANER NO. 10. If not satisfied after 30 days, return the unused portion. We will issue a full refund and reimburse you for all shipping costs.

You can't loose. So order CLEANER NO. 10 today and start using the safest, most economical cleaner of all.

# **CLEANER NO. 10**

THE SAFER CLEANER

NO PETROLEUM BASED SOLVENTS

NO FIRE HAZARD (will not burn)

**NO CHLORINATED SOLVENTS** 

**NO** AMMONIA

NO CAUSTICS

NO BUTYL

# **NO HAZARDOUS SUBSTANCES**

Nothing put safe rehemious blended in a state of the art formula to oleum safer and better at low cost.

SAVES YOUR HEALTH

Non-hazardous per OBHA

SAVES YOUR MONEY

You buy concentrate - not water

SAVES THE ENVIRONMENT

Biodegradable dispose down drain

# U.S. DEPARTMENT OF LABOR

Occupational Safety and Health Administration

REVISED

JANUARY 7.1987

COMB No. 44-R1387

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

**SECTION I** MANUFACTURER'S NAME EMERGENCY TELEPHONE NO. ENVIRONMENTAL SPECIALTIES CORPORATION (401)781-6770 ADDRESS (Number, Street, City, State, and ZIP Code)
860 EDDY STREET, PROVIDENCE, RI
CHEMICAL NAME AND SYNONYMS
INDUSTRIAL SOLVENT CLEANER 02905 TRADE NAME AND SYNONYMS ISC-108 CAS#06264 CHEMICAL FAMILY FORMUL LIQUID ALKALI CLEANING COMPOUND

SECTION	11 -	HAZAF	RDOUS INGREDIENTS		
PAINTS, PRESERVATIVES, & SOLVENTS	*	TLV (Units)	ALLOYS AND METALLIC COATINGS	*	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS 1,1,1, TRICHLOROETHANE	0.47	350	FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES	S OF C	THER LIC	QUIDS, SOLIDS, OR GASES	*	TLV (Units)
NOT A	PPL	CABLE			
		·			

SE	CTION III - I	PHYSICAL DATA	
BOILING POINT (°F.)	212	SPECIFIC GRAVITY (H2O=1)	1.015
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	90%
VAPOR DENSITY (AIR+1)	N/A	EVAPORATION RATE	1.0
SOLUBILITY IN WATER	INFINITE	pH 2% SOLUTION	9.45

FLASH POINT (Method used) NONE	FLAMMABLE LIMITS NONE	Lei	Uel
EXTINGUISHING MEDIA NONE	1000	1	l
SPECIAL FIRE FIGHTING PROCEDURES NONE			
NONE			<del></del>
UNUSUAL FIRE AND EXPLOSION HAZARDS NONE			

PAGE (1)

(Continued on reverse side)

Form OSHA-20 Rev. May 72

#### MATERIAL SAFETY DATA SHEET

Stewart-Hall Chemical Corp.

222 Washington St., Mt. Vernon, NY 10553

Date Prepared: 9/09/88

#### Section I

MANUFACTURER'S NAME: Stewart-Hall Chemical Corp.

ADDRESS: 222 Was

222 Washington St., Mt. Vernon, NY 10553

EMERGENCY PHONE #: 914-668-6300

CHEMICAL NAME & SYNONYMS: Industrial cleaner

TRADE NAME & SYNONYMS: CLEANWASTER-C

CHEMICAL FAMILY: Organic compound

FORMULA: Sec Below

#### Section II - INGREDIENTS

C.A.S.# W/V %

Ethylene glycol butyl ether 111-76-2 <5.0

Propylene glycol methyl ether 20324-33-8 <5.0

Sodium metasilicate 6834-92-0 <5.0

Contains no other substances found on the "Hazardous Substance" List.

#### Section III- PHYSICAL DATA

BOILING POINT: (OF) 212

SPECIFIC GRAVITY: (Water=1) 1.03
PERCENT VOLATILE BY VOLUME: 92
VAPOR PRESSURE: (mm Hg.) NA
VAPOR DENSITY: (Air=1) NA
EVAPORATION RATE: (water =1) 1
SOLUBILITY IN WATER: 100%

APPEARANCE AND ODOR: Clear straw colored. Mild odor.

#### SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used): NA

FLAMMABLE LIMITS:

EXTINGUISHING MEDIA: NA

SPECIAL FIRE FIGHTING PROCEDURES: NA UNUSUAL FIRE & EXPLOSION HAZARDS: None

## SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: Not tested.

EFFECTS OF OVEREXPOSURE: Headache, nausea, dizziness. Vapor may be

irritating to breathe alkaline material.

EMERGENCY & FIRST AID PROCEDURES:

Inhalation - remove to fresh air. In case of contact with skin or eyes, immediately flush with plenty of water. Get medical care for eyes. For ingestion, call physician immediately.

SECTION VI - REACTIVITY DATA
STABILITY: STABLE X UNSTABLE CONDITIONS TO AVOID: INCOMPATABILITY: Acids HAZARDOUS DECOMPOSITION PRODUCTS: None. HAZARDOUS POLYMERIZATION: MAY OCCUR WILL NOT OCCUR X
SECTION VII - SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Pick up with absorbent & dispose of in proper waste site. Flush remainder with water.  WASTE DISPOSAL METHOD: Any proper waste site for chemicals non-hazardous.
SECTION VIII - SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION: (Specify type): None if properly ventilated.  VENTILATION: Local Exhaust. X Special: Mechanical (General) X Other PROTECTIVE GLOVES: Rubber EYE PROTECTION: Goggles OTHER PROTECTIVE EQUIPMENT:
SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING & STORING: Avoid prolonged

OTHER PRECAUTIONS: Keep from freezing

CLEANMASTER-C

inhalation.

Page 2

NFPA Code Health 2

Flammability 3 Reactivity 0

## MATERIAL SAFETY **DATA SHEET**

PRODUCT CODE:

6882

DATE OF PREP.

June 21, 1989

Section I

MANUFACTURER: RAFFI & SWANSON, INC.

100 EAMES STREET

WILMINGTON, MA 01887

MANUFACTURERS' CODE IDENTIFICATION:

Clear Acrylic Bake Enamel 6882

EMERGENCY TELEPHONE NO.: 617-933-4200

PRODUCT CLASS:

Solvent Based Compound

TRADE NAME:

None

THIS PRODUCT IS A MIXTURE CONTAINING ONE OR MORE HAZARDOUS INGREDIENTS.

INFORMATION ON THE COMPOSITION OF RAFFI & SWANSON, INC. PRODUCTS IS CONFIDENTIAL PROPRIETARY INFORMATION AND IS PROVIDED SOLELY TO AID IN SAFE HANDLING OF THESE MATERIALS, USE OR DISCLOSURE FOR ANY OTHER PURPOSE IS EXPRESSLY FORBIDDEN.

Section II — HAZARDOUS INGREDIENTS										
INGREDIENTS	CAS NUMBER	APPROX PERCENT BY WEIGHT	TLV PPM mg/N	LEL % BY VOL	VAPOR PRESSURE mm ol Hg					
Xylol †	1330-20-7	23	100	1.0	5.9					
Petroleum Solvent Naphtha (Aromatic 100)	64742-95-6	20	50	0.9	<10					
Propylene Glycol Methyl Ether Acetate (Dowanol PM Acetate)	108-65-6	12	None Est.	1.5	. 3.7					
n-Butyl Alcohol-skin †	71-36-3	6	50	1.4	4.3					
Fr raldehyde *C* †	50-00-0	0.6	1	Not App	licable					
					,					
A Cubinah ka kha manakina manusinanana	F EDA Dam 4	0 000 270	/CADA Table 1							
† Subject to the reporting requirements o	_	i	{ ·	· · · · · · · · · · · · · · · · · · ·	•					
*C* indicates a carcinogen or suspect car	cinogen acco	rding to	ACGIH, OSHA, NI	IP of IARC.						

## Section III — PHYSICAL DATA

EVAPORATION RATE: FASTER SLOWER, THAN ETHER

BOILING RANGE: 243°-344°F PERCENT VOLATILE BY VOL: 68%

VAPOR DENSITY: ☐ HEAVIER ☐ LIGHTER, THAN AIR

**WEIGHT PER GAL:** 

## Section IV — FIRE AND EXPLOSION HAZARD DATA

FLAMMABILITY CLASSIFICATION: Flammable Liquid DOT:

FLASH POINT (closed cup): 81°F lowest

LEL: 0.9%

flashing component

OSHA:

Flammable Liquid-Class IB

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical or foam.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Keep containers tightly closed. Isolate from heat, sparks and open flame. Do not apply to hot surfaces. Closed containers may explode when exposed to extreme heat.

SPECIAL FIRE FIGHTING PROCEDURES: Water may be ineffective. Water may be used to cool closed containers. Irritating or toxic gases may be present. Use self-contained breathing apparatus.

## Section V — HEALTH HAZARD DATA (Based on data for individual ingredients)

THRESHOLD LIMIT VALUE - See Section II

**EFFECTS OF OVEREXPOSURE** 

CHRONIC TOXICITY: See Section IX.

INHALATION: Vapor irritating to eyes, nose, and throat. Can cause headache, dizziness, nausea, weakness, loss of consciousness.

Prolonged overexposure may cause permanent injury.

SKIN: Penetrates skin.

Prolonged and repeated contact may cause drying of the skin, and absorption of harmful amounts.

EYE CONTACT: Burning and irritation.

INGESTION: Do not take internally. May cause nausea, vomiting, diarrhea and other toxic effects.

## **EMERGENCY AND FIRST AID PROCEDURES**

INHALATION: Provide fresh air. Give artificial respiration or oxygen if necessary. CALL A PHYSICIAN.

SKIN: Wash thoroughly with soap and water. Remove contaminated clothing and shoes. Wash clothes thoroughly before re-use.

EYE CONTACT: Flush with water for at least 15 minutes. SEE PHYSICIAN.

INGESTION: DO NOT INDUCE VOMITING.

If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. CALL A PHYSICIAN.

## Section VI — REACTIVITY DATA

STABILITY: UNSTABLE A STABLE

HAZARDOUS POLYMERIZATION: MAY OCCUR WILL NOT OCCUR

HAZARDOUS DECOMPOSITION PRODUCTS: Combustion produces carbon monoxide and carbon dioxide. Unidentified organic compounds may be formed.

MATERIALS AND CONDITIONS TO AVOID: Strong acids, strong alkalis, strong oxidizers.

## Section VII -- SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Remove all sources of ignition. Avoid breathing vapors. Ventilate area. Remove with inert absorbent and non-sparking tools.

<u>WASTE DISPOSAL METHOD</u>: Incinerate in approved facility. Do not incinerate closed containers. Dispose in accordance with local, state and federal regulations.

## Section VIII — SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Avoid breathing concentrated vapors or overspray particles if sprayed. In confined or poorly ventilated areas, use NIOSH approved mask with chemical canister or supplied air.

<u>VENTILATION</u>: Provide general mechanical ventilation or local exhaust ventilation sufficient to keep concentration of solvent vapors below <u>50</u> PPM

PROTECTIVE GLOVES: Use chemical resistant, impervious gloves for **contact**.

EYE PROTECTION: Safety goggles or face shield where splashes can occur.

#### OTHER PROTECTIVE EQUIPMENT:

#### Section IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: M FLAMMABLE COMBUSTIBLE

Keep in closed containers. Avoid sparks or flame when handling. Can be stored under ambient conditions. Keep closures tight and containers upright to prevent leakage.

OTHER PRECAUTIONS: Avoid contact with the skin. Use good personal hygiene practices. Wash hands thoroughly before eating/drinking/smoking/using toilet facilities.

Inhalation of formaldehyde has been shown to cause cancer in laboratory animals.

er.

# BOWMAN DISTRIBUTION MATERIAL SAFETY DATA SHEET

## **SECTION I**

PRODUCT NAME  CLEAR ACRYLIC GOATING	BOWMAN PAR 24723	T NO. (page 1 of 2)	
SUPPLIER  Bowman Distribution: Bliring Group Inc.		EMERGENCY 1	TELEPHONE NO.
ADDRESS 850 East 72nd Street, Cleveland, OH 44103		DATE 4/25/86	
HAZARDOUS MATERIAL DESCRIPTION, PROPER SHIPPING N Aerosol Spray Paint, Consumer Commodity, C		ARD ID NO. (49 CFR 17	72.101)
ADDITIONAL HAZARD CLASSES (as applicable)  N.A.			
CHEMICAL FAMILY N.A.	FORMULA X9435		

## **SECTION II - HAZARDOUS INGREDIENTS**

CAS REGISTRY NO.	%W	%V	CHEMICAL NAME(S)	PPM	LV Mg/M³	Listed as a Carcinogen in NTP, IARC or OSHA 1910(z) (specify)
1330-20-7	35-40		Xylene	100	435	No
67-64-1	30-35		Acetone	750	1780	No ·
				<u> </u>		
				<u> </u>	·	
_	15		Propellant: Propane/Isobutane/n-Butane			No
				-		

## **SECTION III - PHYSICAL DATA**

BOILING POINT 133-281 .F	°C	SPECIFIC GRAVITY (H ₂ O = 1)	.84				
VAPOR PRESSURE 186 @°F _20_°C		VAPOR PRESSURE 186 @ °F _20 °C █ mm Hg ☐ psi		PERCENT VOLATILE BY VOLUME (%)	90	PERCENT SOLID BY WEIGHT (%)	10
VAPOR DENSITY (AIR = 1)	N.Ar-	EVAPORATION RATE ( = 1)	N.A.				
SOLUBILITY IN WATER	N.A.	pH =	N.A.				
APPEARANCE AND ODOR Paint, solvent odor.	· <del></del>			MATERIAL IS: LIQUID			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	method used	FLAMMABLE LIMITS	LEL	UEL
<u>0</u> °F <u>-18</u> °C			1.1	N.A.
EXTINGUISHING MEDIA		<del></del>		
Carbon Dioxide, Dry Chemic	al, or Alcohol Foam			
SPECIAL FIRE FIGHTING PROC	EDURES			
Water spray may be ineffecti	ve. Water may be used to	cool closed containers to prevent ;	pressure build-up and	possible autoignition or
explosion when exposed to	extreme heat. If water is u	ised, fog nozzies are preferable.		
UNUSUAL FIRE AND EXPLOSIC	N HAZARDS			
Vapors are heavier than air a	nd may travel along the g	pround or may be moved by ventilat	ion and ignited by pil	ot lights, other flames,
sparks, heaters, smoking, ele	ctric motors or other ign	ition sources at locations distant fro	om material handling	point.
,,,,,,				

EECCOTO ACA	VEDEVOCCUS	<u> </u>	SECT				UDECUOLO LIMENTA DE LA COMPANIO	
	VEREXPOSUR  ation of vapors				-	HRESHOLD LIMIT VALUE See Section II ERMISSIBLE EXPOSURE LIMIT		
		ausea,	, headache,	possible un	consciousness, and	,	OTHER LIMIT	
even asphyxiati	on.				<del></del>			
						·		
PRIMARY ROU	TES OF ENTRY	Y inh	nalation 🔀	Skin Conta	ct Other (speci	fy)	-	
	AND FIRST AID							
					cult, administer oxy	gen. If brea	thing has stopped, give artificial respiration.	
Keep person wa	arm, quiet and g	get me	dical attenti	ion.				
								<del></del>
					VI - REAC	CTIVIT	Y DATA	
	UNSTABLE		CONDITI	ONS TO AV	OID			
STABILITY	STABLE	X	Heat coa	rks and oper	n flame			<del></del>
NCOMPATIBIL	LITY (materials			iks and oper	m manie.			
Avoid contact w	vith: strong oxid	dizing a	agents and	heat.				
HAZARDOUS E <mark>N.A</mark> .	DECOMPOSITION	UN PR	RODUCTS:					
		MA	AY OCCUR		CONDITIONS TO	DAVOID		
HAZARDOUS POLYMERIZAT	ION	WI	LL NOT OC	CUR X				
	·				<u>L</u>			
						LEAK I	PROCEDURES	
	TAKEN IN CAS					l and transfe	r to a closed container. Eliminate all ignition sou	Ircos
WASTE DISPO	SAL METHOD						<del></del>	
waterial Collecti	ed on absorben	ıt male	rial may be	deposited in	n a nosted toxic sub	estance land	fill in accordance with local, state and federal re	gulations
viateriai collect	ed on absorben	t mate	erial may be	deposited in	n a posted toxic sub	ostance land	fill in accordance with local, state and federal re	gulations
					n a posted toxic sub	ostance land	fill in accordance with local, state and federal re	gulations
CERCLA (Supe	ed on absorben				n a posted toxic sub	ostance land	fill in accordance with local, state and federal re	gulations
CERCLA (Supe N.A. RCRA HAZARD		TABLE	QUANTIT	Y (in lbs)	n a posted toxic sub	ostance land	ifill in accordance with local, state and federal re	gulations
CERCLA (Supe N.A. RCRA HAZARD	erfund) REPORT	TABLE	QUANTIT	Y (in lbs)			fill in accordance with local, state and federal re	gulations
CERCLA (Supe N.A. RCRA HAZARD N.A. VOLATILE ORG	OOUS WASTE N	TABLE	QUANTITY O CFR 261 3	Y (in lbs)	n a posted toxic sub		fill in accordance with local, state and federal re	gulations
CERCLA (Supe N.A. RCRA HAZARD N.A. /OLATILE ORG	OOUS WASTE N	TABLE	QUANTITY O CFR 261 3	Y (in lbs)		gal	ifill in accordance with local, state and federal re	gulations
CERCLA (Supe N.A. RCRA HAZARD N.A. /OLATILE ORG	OOUS WASTE N GANIC COMPO	TABLE	QUANTITY O CFR 261 3 (VOC)	Y (in lbs)  3)  X Theo	oreticallb/g	gal N.A.		gulations
DERCLA (Supe N.A. RCRA HAZARD N.A. /OLATILE ORC as packaged in	GANIC COMPO	TABLE NO (40 DUND (	COC)	Y (in lbs)  3)  X Theo	oreticallb/g	gal N.A.	on Information	gulations
CERCLA (Supe N.A. RCRA HAZARD N.A. /OLATILE ORD as packaged in	GANIC COMPO ninus water)	TABLE NO (40)	O CFR 261 3 (VOC)	Y (in lbs)  3)  Theo Anal	oretical 5.1 lb/g	gal al N.A. TECTI		gulations
CERCLA (Supe N.A. RCRA HAZARD N.A. VOLATILE ORD as packaged in	GANIC COMPO ninus water)	TABLE NO (40)	O CFR 261 3 (VOC)	Y (in lbs)  3)  Theo Anal	oretical 5.1 lb/g	gal al N.A. TECTI	ON INFORMATION	gulations
CERCLA (Supe N.A. RCRA HAZARD N.A. VOLATILE ORC (as packaged in	GANIC COMPO ninus water)	TABLE NO (40) DUND (	O CFR 261 3 (VOC)  N VIII  O CAL EXHA	Y (in lbs)  Theo Anal SPEC reathing app	oretical 5.1 lb/galytical b/galloretical b/galloret	gal N.A. TECTI	ON INFORMATION	gulations
CERCLA (Supe N.A. CCRA HAZARD N.A. VOLATILE ORC as packaged in RESPIRATORY NIOSH/MSHA j	GANIC COMPO ninus water)	TABLE NO (40 DUND ( ) I (spec d self-c	O CFR 261 3 (VOC)  N VIII (Vype) (contained be) (VCAL EXHA	Y (in lbs)  Theo Anal SPEC reathing app  UST (specification as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a s	oretical 5.1 lb/ga lytical ib/ga CIAL PRO paratus with a full fa y rate) posure below TLV(s	gal N.A. TECTI	ON INFORMATION erated in pressure demand.  SPECIAL	gulations
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CERCLA (Supe V.A. CORA HAZARD V.A. VOLATILE ORO as packaged in RESPIRATORY VIOSH/MSHA I	GLOVES (specification)	TABLE NO (40) DUND ( I (spec diself-comme	O CFR 261 3 (VOC)  N VIII (VOC)  COL EXHAUMICAL	Y (in lbs)  Theo Anal SPEC reathing app  UST (specification as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a second as a s	oretical 5.1 lb/ga lytical ib/ga CIAL PRO paratus with a full fa y rate) posure below TLV(s	TECTION CE PIECE OP	ON INFORMATION erated in pressure demand.  SPECIAL  OTHER  TECTION (specify type)	
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24723 (page 2 of 2)

BOWMAN DISTRIBUTION. BARNES GROUP INC. 850 East 72nd Street. Cleveland. OH 44103 Emergency Telephone No. (216) 391-7200 4-25-86

NFPA Code Health 2 Flammability 3 Reactivity 0

## MATERIAL SAFETY DATA SHEET

PRODUCT CODE:

6914

DATE OF PREP.

June 21, 1989

Section I

MANUFACTURER: RAFFI & SWANSON, INC.

100 EAMES STREET WILMINGTON, MA 01887 MANUFACTURERS' CODE IDENTIFICATION:

Clear Bake Enamel 6914

EMERGENCY TELEPHONE NO.: 617-933-4200

PRODUCT CLASS: • * *Solvent Based Compound

TRADE NAME:

None

THIS PRODUCT IS A MIXTURE CONTAINING ONE OR MORE HAZARDOUS INGREDIENTS

INFORMATION ON THE COMPOSITION OF RAFFI & SWANSON, INC. PRODUCTS IS CONFIDENTIAL PROPRIETARY INFORMATION AND IS PROVIDED SOLELY TO AID IN SAFE HANDLING OF THESE MATERIALS. USE OR DISCLOSURE FOR ANY OTHER PURPOSE IS EXPRESSLY FORBIDDEN.

Section II — HAZARDOUS INGREDIENTS
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INGREDIENTS	CAS NUMBER	APPROX. PERCENT BY WEIGHT	PPM TI	LV mg/M³	LEL % BY VOL	VAPOR PRESSURE mm of Hg	
Xylol †	1330-20-7	26	100		1.0	5.9	
Propylene Glycol Methyl Ether Acetate (Dowanol PM Acetate)	108-65-6	11	None Est	•	1.5	3.7	
Petroleum Solvent Naphtha (Aromatic 100)	64742-95-6	11	50		0.9	<10	
n-Butyl Alcohol-skin †	71-36-3	7	50		1.4	4.3	
Toluol †	108-88-3	3	100		1.2	22	
Famaldehyde *C* † 🖊	50-00-0	0.67	1		Not App	licable	
† Subject to the reporting requirements o *C* indicates a carcinogen or suspect car	•	Ī	1	1	1	•	

## Section III — PHYSICAL DATA

EVAPORATION RATE: FASTER SLOWER, THAN ETHER

VAPOR DENSITY: 

□ HEAVIER □ LIGHTER, THAN AIR

BOILING RANGE: 232°-344°F PERCENT VOLATILE BY VOL:

**WEIGHT PER GAL:** 8.32#

## Section IV — FIRE AND EXPLOSION HAZARD DATA

FLAMMABILITY CLASSIFICATION:

Use self-contained breathing apparatus.

DOT:

FLASH POINT (closed cup):

LEL: 0.9%

Flammable Liquid

flashing component

40°F lowest

Flammable Liquid-Class IB

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical or foam.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Keep containers tightly closed. Isolate from heat, sparks and open flame. Do not apply to hot surfaces. Closed containers may explode when exposed to extreme heat.

51 .: CIAL FIRE FIGHTING PROCEDURES: Water may be ineffective. Water may be used to cool closed containers. Irritating or toxic gases may be present.

TRW-00529

527

PRODUCT CODE:

6914

Section V — HEALTH HAZARD DATA	(Based on data for individual ingredients)
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THRESHOLD LIMIT VALUE - See Section II

**EFFECTS OF OVEREXPOSURE** 

CHRONIC TOXICITY: See Section IX.

INHALATION: Vapor irritating to eyes, nose, and throat. Can cause headache, dizziness, nausea, weakness, loss of consciousness.

Prolonged overexposure may cause permanent injury.

SKIN: Penetrates skin.

Prolonged and repeated contact may cause drying of the skin, and absorption of harmful amounts.

EYE CONTACT: Burning and irritation.

INGESTION: Do not take internally. May cause nausea, vomiting, diarrhea and other toxic effects.

#### **EMERGENCY AND FIRST AID PROCEDURES**

INHALATION: Provide fresh air. Give artificial respiration or oxygen if necessary. CALL A PHYSICIAN.

SKIN: Wash thoroughly with soap and water. Remove contaminated clothing and shoes. Wash clothes thoroughly before re-use.

EYE CONTACT: Flush with water for at least 15 minutes. SEE PHYSICIAN.

INGESTION: DO NOT INDUCE VOMITING.

If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. CALL A PHYSICIAN.

## Section VI — REACTIVITY DATA

STABILITY: UNSTABLE STABLE

HAZARDOUS POLYMERIZATION: MAY OCCUR MULL NOT OCCUR

HAZARDOUS DECOMPOSITION PRODUCTS: Combustion produces carbon monoxide and carbon dioxide. Unidentified organic compounds may be formed.

MATERIALS AND CONDITIONS TO AVOID: Strong acids, strong alkalis, strong oxidizers.

## Section VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Remove all sources of ignition. Avoid breathing vapors. Ventilate area. Remove with inert absorbent and non-sparking tools.

<u>WASTE DISPOSAL METHOD</u>: Incinerate in approved facility. Do not incinerate closed containers. Dispose in accordance with local, state and federal regulations.

## Section VIII — SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Avoid breathing concentrated vapors or overspray particles if sprayed. In confined or poorly ventilated areas, use NIOSH approved mask with chemical canister or supplied air.

<u>VENTILATION</u>: Provide general mechanical ventilation or local exhaust ventilation sufficient to keep concentration of solvent vapors below 50 PPM

<u>PROTECTIVE GLOVES</u>: Use chemical resistant, impervious gloves for contact.

EYE PROTECTION: Safety goggles or face shield where splashes can occur.

OTHER PROTECTIVE EQUIPMENT:

## Section IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: TEAMMABLE COMBUSTIBLE

Keep in closed containers. Avoid sparks or flame when handling. Can be stored under ambient conditions. Keep closures tight and containers upright to prevent leakage.

OTHER PRECAUTIONS: Avoid contact with the skin. Use good personal hygiene practices. Wash hands thoroughly before eating/drinking/smoking/using toilet facilities.

Inhalation of formaldehyde has been shown to cause cancer in laboratory animals.

NFPA Code

Health Flammability Reactivity

2 3 0

MATERIAL SAFETY **DATA SHEET** 

PRODUCT CODE:

3500

DATE OF PREP.

March 9, 1989

## Section I

MANUFACTURER: RAFFI & SWANSON, INC.

100 EAMES STREET WILMINGTON, MA 01887

MANUFACTURERS' CODE IDENTIFICATION:

Clear Lacquer 3500

EMERGENCY TELEPHONE NO.: 617-933-4200

PRODUCT CLASS:

Solvent Based Compound

TRADE NAME: None

THIS PRODUCT IS A MIXTURE CONTAINING ONE OR MORE HAZARDOUS INGREDIENTS

INFORMATION ON THE COMPOSITION OF RAFFI & SWANSON, INC. PRODUCTS IS CONFIDENTIAL PROPRIETARY INFORMATION AND IS PROVIDED SOLELY TO AID IN SAFE HANDLING OF THESE MATERIALS. USE OR DISCLOSURE FOR ANY OTHER PURPOSE IS EXPRESSLY FORBIDDEN.

## Section II — HAZARDOUS INGREDIENTS

INGREDIENTS	CAS NUMBER	APPROX. PERCENT BY WEIGHT	TL PPM	.V mg/M³	LEL % BY VOL	VAPOR PRESSURE mm of Hg	
Xylol t	1330-20-7	33	100		1.0	5.9	
Propylene Glycol Methyl Ether Acetate (Dowanol PM Acetate)	108-65-6	24	None Est	•	1.5	3.7	
Toluol †	108-88-3	20	100	in	1.2	22	
n-Butyl Acetate	123-86-4	4	150		1.7	8	
Isopropyl Alcohol	67-63-0	2	400		2.0	33	
Butyl Benzyl Phthalate † (Santicizer 160)	85-68-7	1	Not Estab.		0.3	Not Applic.	
† Subject to the reporting requirements of	F EPA Reg. 4	D CFR 372	(SARA Ti	tle III,	Sec. 313)	•	
Mixture does not contain any known or sus	pect carcino	gen accor	ding to A	CGIH, OSH	A, NTP or	IARC.	

## Section III — PHYSICAL DATA

EVAPORATION RATE: FASTER SLOWER, THAN ETHER BOILING RANGE: 180°-295°F PERCENT VOLATILE BY VOL: 874 VAPOR DENSITY: ☐ HEAVIER ☐ LIGHTER, THAN AIR

**WEIGHT PER GAL:** 

7.85#

flashing component

## Section IV — FIRE AND EXPLOSION HAZARD DATA

FLAMMABILITY CLASSIFICATION:

FLASH POINT (closed cup):

40°F lowest

LEL: 1.0%

DOT: OSHA:

Flammable Liquid Flammable Liquid-Class IB

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical or foam.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Keep containers tightly closed. Isolate from heat, sparks and open flame. Do not apply to hot surfaces. Closed containers may explode when exposed to extreme heat.

SHECIAL FIRE FIGHTING PROCEDURES: Water may be ineffective. Water may be used to cool closed containers. Irritating or toxic gases may be present. Use self-contained breathing apparatus.

PRODUCT CODE:

3500

## Section V — HEALTH HAZARD DATA (Based on data for individual ingredients)

THRESHOLD LIMIT VALUE - See Section II

**EFFECTS OF OVEREXPOSURE** 

CHRONIC TOXICITY: Not known to produce chronic or cumulative effects with exposures within recommended guidelines.

INHALATION: Vapor irritating to eyes, nose, and throat. Can cause headache, dizziness, nausea, weakness, loss of consciousness.

Prolonged overexposure may cause permanent injury.

SKIN: Brief contact not expected to be harmful.

Prolonged and repeated contact may cause drying of the skin, and absorption of harmful amounts.

EYE CONTACT: Burning and irritation.

INGESTION: Do not take internally. May cause nausea, vomiting, diarrhea and other toxic effects.

#### **EMERGENCY AND FIRST AID PROCEDURES**

INHALATION: Provide fresh air. Give artificial respiration or oxygen if necessary. CALL A PHYSICIAN.

SKIN: Wash thoroughly with soap and water. Remove contaminated clothing and shoes. Wash clothes thoroughly before re-use,

EYE CONTACT: Flush with water for at least 15 minutes. SEE PHYSICIAN.

INGESTION: DO NOT INDUCE VOMITING.

If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. CALL A PHYSICIAN.

### Section VI — REACTIVITY DATA

STABILITY: UNSTABLE STABLE

HAZARDOUS POLYMERIZATION: MAY OCCUR WILL NOT OCCUR

HAZARDOUS DECOMPOSITION PRODUCTS: Combustion produces carbon monoxide and carbon dioxide. Unidentified organic compounds may be formed.

MATERIALS AND CONDITIONS TO AVOID: Strong acids, strong alkalis, strong oxidizers.

## Section VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Remove all sources of ignition. Avoid breathing vapors. Ventilate area. Remove with inert absorbent and non-sparking tools.

WASTE DISPOSAL METHOD: Incinerate in approved facility. Do not incinerate closed containers. Dispose in accordance with local, state and federal regulations.

## Section VIII — SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Avoid breathing concentrated vapors or overspray particles if sprayed. In confined or poorly ventilated areas, use NIOSH approved mask with chemical canister or supplied air.

VENTILATION: Provide general mechanical ventilation or local exhaust ventilation sufficient to keep concentration of solvent vapors below 100 PPM

PROTECTIVE GLOVES: Use chemical resistant, impervious gloves for prolonged or repeated contact.

EYE PROTECTION: Safety goggles or face shield where splashes can occur.

OTHER PROTECTIVE EQUIPMENT:

## Section IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: XI FLAMMABLE COMBUSTIBLE

Keep in closed containers. Avoid sparks or flame when handling. Can be stored under ambient conditions. Keep closures tight and containers upright to prevent leakage.

OTHER PRECAUTIONS: Avoid prolonged and repeated contact with the skin. Use good personal hygiene practices. Wash hands thoroughly before eating/drinking/smoking/using toilet facilities.

Southern Coatings
P.O. Box 160
Sumter, SC 29150
EMERGENCY PHONE NO. 803-775-6351
INFORMATION PHONE NO. 803-776-6351

APPROVED

NOV 2 5 1986

# MATERIAL SAFETY DATA SHENVIRONMENTAL

## SECTION 1

DATE OF PREPARATION 11/20/86

TRADE NAME

CLEAR POLYESTER WENL

MANUFACTURER CODE I.D.

68 - 9815 9U - 154 - 3

INGREDIENT	CAS NO.			ALLOWABLE EXPOSURE LEVEL					VP MM_HG_6
			PPM	MG/CU.M	. FBR/CC	MPPCF	SKIN	MAC	20 DEG.C
2 - BUTOXYETHANOL	111-76-2	T L V P E L	25 50	120 240	na na	na na	X X	na na	1
ISOBUTYL ACETATE	110-19-0	T L V P E L	150 150	700 700	n a n a	na na	6 N 6 N	na na	na
OLUENE	108-88-3	T L V P E L	100 200	375	na na	na na	na na	n a n a	22
SOBUTYL ALCOHOL	78 - 83 - 1	T L V P E L	50 100	150 300	na na	n a n a	n a n a	na na	10
FORMALDEHYDE	50-00-0	TLV PEL	13	1.50	na na	na na	n a n a	n a n a	na
PROPYLENE GLYCOL METHYL ETHER ACETATE	108-65-6	NONE	ESTABL	ISHED	na na	na na	n a n a	na na	2
na = Not applicable X-SKIN = SKIN ABSOR! X-MAC = ALLOWABLE E!	PTION MUST BE	CONS	IDERE	D AS A	ROUTE OF E	XPOSI	JRE TIM	F PF	RIOD

## SECTION III - HEALTH INFORMATION

EFFECTS OF SHORT TERM OVEREXPOSURE
SWALLOWING

Can cause gastrointestinal irritation, nausea, and vomiting. Aspiration of material into lung may cause chemical pneumonitis which can be fatal.

INHALATION

Inhalation of 2-butoxyethanol vapors, in the range of 300 to 600ppm, for for several hours would be expected to cause respiratory irritation narcosis, and damage to the kidney and liver.

May cause irritation of the respiratory system, and pulmonary edema which may be delayed in onset.

EYE

Hay cause transient corneal damage.

SKIN

Liquid material may be absorbed through the skin in harmful amounts.

May cause defatting and irritation of the skin.

EFFECTS OF REPEATED OVEREXPOSURE

Repeated overexposure to toluene may cause liver damage.

Reports have associated prolonged and repeated occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

To solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH.

Toluene has been found to cause kidney, lung and spleen damage in laboratory animals.

90 day subchronic inhalation studies of 2-butoxyethanol at 77ppm exposures to rats, resulted in blood damage. At 25 ppm no effects were observed.

Tetratology studies on rats exposed to 300ppm of 2-butoxyethanol resulted in maternal and embryo lethality. At 200ppm and 100ppm maternal, embryo, and fetotoxicity were observed. No effects were observed at 50ppm. Formaldehyde is listed as a potential carcinogen by the National Toxicology Program. The American Medical Association has concluded that the principal effect of formaldehyde on humans is sensory irritation to the eyes, nose, and throat. The AMA stated "no nasal tumors that can be decisively attributed to formaldehyde have occured in humans, nor has damage to body sites distant from the site of exposure been evident in humans."

## SECTION IV - FIRST AID AND EMERGENCY PROCEDURES

;WALLOWING
If swallowed call Poison Control Center, Hospital Emergency Room, or Physician immediately.
INHALATION
Remove to fresh air immediately.
If breathing has stopped, give artifi-

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SECTION IV - FIRST AID AND EMERGENCY PROCEDURES: (CONTINUED)
```

INHALATION cial respiration. Keep warm and quiet. Get medical attention immediately. EYE Flush with large amounts of ly. Continue for at least f water, lift 15 minutes. lifting upper and lower lides. Get medical attention. o f Remove contaminated clothing. Wash affected area Obtain medical attention if irritation persists. S_TO_PHYSICIAN______ with soap and water. NOTES Ethylene glycol monobutyl ether is metabolized, at least in part, to butoxyacetic acid, and this substance is excreted in the urine. Excessive exposure by any route may result in erythropenia, reticulocytosis, granulocytosis, leukocytosis, fragility of erythrocytes and hemturia. i s

## SECTION V - PHYSICAL DATA

DEG.F. TO 350 BOILING RANGE DEG.F.

A second of a district of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the contro

VAPOR DENSITY Heavier than air. % VOLATILE BY VOLUME

EVAPORATION RATE Slower than ether. VOC 5.5 Ib/gal less water 660 g/I less water CALCULATED VOC 27.1 3252 WEIGHT LB./GAL. 8.1 tb/gal solids a/l solids CALCULATED

## SECTION VI - FIRE AND EXPLOSION DATA

NFPA FLAMMABILITY CLASSIFICATION FLAMMABLE LIQUID - CLASS IB

**FLASHPOINT** DEG.F, CALCULATED

EXTINGUISHING MEDIA
Use NFPA Class B fire extinguish
cal or alcohol foam) designed to
mer foam is preferred for large
UNUSUAL FIRE AND EXPLOSION HAZARDS extinguishers (carbon dioxide, all purpose dry chemi-lesigned to extinguish flammable liquid fires. Poly-for large fires.

During emergency conditions, cause a health hazard. Symp medical attention. ons, overexposure to decompostion products may Symptoms may not be immediately apparent. Obtain

SPECIAL FIRE FIGHTING PROCEDURES
firefighters should

ighters should wear self-contained breathing apparatus. may be ineffective, but may be used to cool exposed containers to nt pressure build-up and possible auto-ignition or explosion when ed to extreme heat. If water is used, fog nozzles are preferable. exposed to extreme heat.

## SECTION VII - REACTIVITY DATA

STABILITY CONDITIONS TO AVOID CONDITIONS TO AVOID

Avoid excessive heat and sources of ignition.

INCOMPATABILITY (MATERIALS TO AVOID)

Strong acids or alkaline materials.

HAZARDOUS DECOMPOSITION PRODUCTS

Burning, including when heated by welding or cutting, will produce carbon monoxide and carbon dioxide. In addition, oxides of nitrogen formal dehyde may be generated. CONDITIONS TO AVOID Keep away from heat sparks and flame.

### SECTION VIII - ENVIRONMENTAL INFORMATION

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED S TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED
Wear respirators, eye, hand, and body protection appropriate for the size of the spill and the exposures encountered.
Keep spectators away. Eliminate all ignition sources (flames, hot surfaces, and sources of electrical, static or frictional sparks).
Dike and contain spill with inert material (e.g. sand, earth). Transfer liquids to covered metal containers for recovery or disposal, or remove with inert absorbent. Use only non-sparking tools. Place absorbent dik materials in covered metal containers for disposal. Prevent contamination sewers, streams, and groundwater with spilled material or used remove ent diking t contamination or used absorbent.

WASTE DISPOSAL

Dispose in
Incinerate Dispose in accordance with federal, state and local laws.
Incinerate only in EPA permitted facility. Do not incinerate closed containers. Observe precautions for disposal of flammable materials.
Contaminated absorbant may be disposed in a hazardous waste landfill.
Dispose only in accordance with federal, state and local regulations. in accordance RCRA CLASSIFICATION inis product, based on if discarded directly, would be classified a hazardous ignitability characteristic, i.e. has a flash point of ess. The proper RCRA classification would be DD01. based on its deg. f. or ENVIRONMENTAL HAZARDS None known less.

## SECTION IX - PERSONAL PROTECTION INFORMATION

RESPIRATORY PROTECTION When spraying outdoors, or in open or well-ventilated areas, use NIOSH ap-

## SECTION IX - PERSONAL PROTECTION INFORMATION: (CONTINUED)

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RESPIRATORY PROTECTION

proved mechanical filter respirator to remove overspray.

In restricted ventilation areas, use NIOSH approved paint spray (combination chemical cartridge/mechanical filter) respirator to remove spray mist and organic vapors. In confined areas use a NIOSH approved air supplied respirator. Refer to OSHA 29 CFR 1910.134 "Respiratory Protection".

VENTILATION

Provide general dilution and local exhaust ventilation in sufficient volume and pattern to keep concentration of hazardous ingredients listed in Section II below the lowest exposure limit stated. Remove decomposition products that are generated when welding, cutting, or brazing objects coated with this product. Vapors produced while drying or baking this product must be properly vented.

HAND PROTECTION

Solvent impermeable gloves are required for repeated or prolonged contact.

EYE PROTECTION

Wear safety spectacles.

OTHER PROTECTIVE EQUIPMENT

Eyewash facility, safety shower.
```

## SECTION X - SPECIAL PRECAUTIONS

```
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Do not store above 95 degrees F. Store large quantities in compliance with OSHA 29CFR1910.106.

OTHER PRECAUTIONS

Do not take internally. Close container after each use.
Avoid skin contact.
Empty containers must not be washed and re-used for any purpose.
Containers should be grounded and bonded to the receiving container.
Do not weld, braze or cut on empty container.
Never use pressure to empty. Drum is not a pressure vessel.
```

## SECTION XI - OTHER INFORMATION

US DOT INFORMATION

HAZARD CLASS: FLAMMABLE LIQUID

ID NUMBER:

UN 1263

PROPER SHIPPING NAME:

PAINT - FLAMMABLE LIQUID

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. WHILE THE INFORMATION IS BELIEVED TO BE RELIABLE, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THIS DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. SINCE THE USE OF THIS INFORMATION AND THE CONDITIONS AND USE OF THIS PRODUCT ARE CONTROLLED BY THE USER, IT IS THE USER'S OBLIGATION TO DETERMINE THE CONDITIONS OF SAFE USE OF THE PRODUCT.

TRW CONTROLS & FASTENERS GROUP 31 AMES STREET CAMBRIDGE, MA

02142

Southern Coatings P.O. Box 160 Sumter, SC 29150

TRW CONTROLS & FASTENERS GROUP 31 AMES STREET CAMBRIDGE, MA

02142 Attn: Plant Manager/Director Safety

11/20/86

Dear Customer:

The enclosed Material Safety Data Sheet (MSDS) is being provided in conformance with the OSHA Hazard Communication Standard.

If someone other than the recipient is responsible for your hazard communication program, please forward it to his/her attention.

The standard requires you to maintain a file of MSDS for each hazardous material you use, and also to communicate and make this information available to your employees.

If you require additional information concerning this product, please contact your local salesperson.

We appreciate your patronage and look forward to serving you in the future.

Southern Coatings

NFPA Code Health Flammability 3 Reactivity 0

## MATERIAL SAFETY DATA SHEET

PRODUCT CODE:

DATE OF PREP.

April 19, 1989

## Section I

MANUFACTURER: RAFFI & SWANSON, INC.

MANUFACTURERS' CODE IDENTIFICATION

100 EAMES STREET WILMINGTON, MA 01887

Clear Mrimaplate 5045

EMERGENCY TELEPHONE NO.: 617-933-4200

PRODUCT CLASS:

Solvent Based Compound

TRADE NAME:

None

THIS PRODUCT IS A MIXTURE CONTAINING ONE OR MORE HAZARDOUS INGREDIENTS.

INFORMATION ON THE COMPOSITION OF RAFFI & SWANSON, INC. PRODUCTS IS CONFIDENTIAL PROPRIETARY INFORMATION AND IS PROVIDED SOLELY TO AID IN SAFE HANDLING OF THESE MATERIALS. USE OR DISCLOSURE FOR ANY OTHER PURPOSE IS EXPRESSLY FORBIDDEN.

Section	II — HAZARDOUS	SINGRED	IENTS			
INGREDIENTS	CAS NUMBER	APPROX. PERCENT BY WEIGHT	TL' PPM	V mg/M³	# BA AOF FEF	VAPOR PRESSURE turn of Hg
Ethyl Alcohol	64-17-5	76	1000		4.3	45
Propylene Glycol Methyl Ether (Dowanol PM)	107-98-2	10	100	١	Not Avail.	. 8
Methyl Alcohol-Skin †	67-56-1	4	200		6.0	96
Formaldehyde *C*	50-00-0	0.03	1		-Not Appl	icable
t Subject to the reporting popularment		<b>6</b> ED 272	/ CADA T: 13		212	
<ul><li>† Subject to the reporting requirement</li><li>*C* indicates a carcinogen or suspect</li></ul>	•					
a marcaces a care modell of suspect	cardinogen accor	urny to P	legin, osh	, NIP OF	IAKL.	,

Section III — PHYSICAL DATA

EVAPORATION RATE: () FASTER (x) SLOWER, THAN ETHER

VAPOR DENSITY: WHEAVIER CILIGHTER, THAN AIR

PERCENT VOLATILE BY VOL: 93% BOILING RANGE: 147°-248°F

WEIGHT PER GAL:

Section IV — FIRE AND EXPLOSION HAZARD DATA

**FLAMMABILITY CLASSIFICATION** DOT:

FLASH POINT (closed cup): 52°F lowest

LEL:4.3%

Flammable Liquid OSHA:

flashing component

Flammable Liquid-Class IB

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical or foam.

LINUSUAL FIRE AND EXPLOSION HAZARDS: Keep containers tightly closed. Isolate from heat, sparks and open flame. Do not apply to hot surfaces. 'd containers may explode when exposed to extreme heat.

SPECIAL FIRE FIGHTING PROCEDURES: Water may be ineffective. Water may be used to cool closed containers. Irritating or toxic gases may be present. Use self-contained breathing apparatus.

6045

## Section V — HEALTH HAZARD DATA (Based on data for individual ingredients)

THRESHOLD LIMIT VALUE - See Section II

**EFFECTS OF OVEREXPOSURE** 

CHRONIC TOXICITY: See Section IX.

INHALATION: Vapor irritating to eyes, nose, and throat. Can cause headache, dizziness, nausea, weakness, loss of consciousness.

Prolonged overexposure may cause permanent injury.

SKIN: Penetrates skin.

Prolonged and repeated contact may cause drying of the skin, and absorption of harmful amounts.

EYE CONTACT: Burning and irritation.

INGESTION: Do not take internally. May cause nausea, vomiting, diarrhea and other toxic effects.

#### **EMERGENCY AND FIRST AID PROCEDURES**

INHALATION: Provide fresh air. Give artificial respiration or oxygen if necessary. CALL A PHYSICIAN.

SKIN: Wash thoroughly with soap and water. Remove contaminated clothing and shoes. Wash clothes thoroughly before re-use.

EYE CONTACT: Flush with water for at least 15 minutes. SEE PHYSICIAN.

INGESTION: DO NOT INDUCE VOMITING.

If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. CALL A PHYSICIAN.

### Section VI — REACTIVITY DATA

STABILITY: UNSTABLE X STABLE

HAZARDOUS POLYMERIZATION: MAY OCCUR WILL NOT OCCUR

<u>HAZARDOUS DECOMPOSITION PRODUCTS</u>: Combustion produces carbon monoxide and carbon dioxide. Unidentified organic compounds may be formed.

MATERIALS AND CONDITIONS TO AVOID: Strong acids, strong alkalis, strong oxidizers.

## Section VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Remove all sources of ignition. Avoid breathing vapors. Ventilate area. Remove with inert absorbent and non-sparking tools.

WASTE DISPOSAL METHOD: Incinerate in approved facility. Do not incinerate closed containers. Dispose in accordance with local, state and federal regulations.

#### Section VIII — SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Avoid breathing concentrated vapors or overspray particles if sprayed. In confined or poorly ventilated areas, use NIOSH approved mask with chemical canister or supplied air.

 $\underline{\text{VENTILATION}}: \text{Provide general mechanical ventilation or local exhaust ventilation sufficient to keep concentration of solvent vapors below } \underline{100}. \text{PPM}$ 

PROTECTIVE GLOVES: Use chemical resistant, impervious gloves for Contact.

EYE PROTECTION: Safety goggles or face shield where splashes can occur.

OTHER PROTECTIVE EQUIPMENT:

## Section IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: THE FLAMMABLE COMBUSTIBLE

Keep in closed containers. Avoid sparks or flame when handling. Can be stored under ambient conditions. Keep closures tight and containers upright to prevent leakage.

OTHER PRECAUTIONS: Avoid contact with the skin. Use good personal hygiene practices. Wash hands thoroughly before eating/drinking/smoking/using toilet facilities.

Inhalation of formaldehyde has been shown to cause cancer in laboratory animals.

Repeated overexposure to methanol may injure retina and optic nerve and cause blindness.

#### MATERIAL SAFETY DATA SHEET

#### FOR COATINGS . RESINS AND RELATED MATERIALS

DATE OF PREPARATION 8/12/92

PAGE 1

MANUFACTURER'S NAME : MORTON COAFINGS INC.

ADDRESS : CHICOPEE FACILITY

ADDRESS :

40 HAYNES CIRCLE

CITY.STATE :

CHICOPEE, MA 01020

EMERGENCY TELEPHONE NO. DAY: 413-592-4191 NIGHT: 800-424-9300

INFORMATION TELEPHONE NO. DAY: 413-592-4191 NIGHT: 800-424-9300

SECTION I PRODUCT IDENTIFICATION

Manufacturer's Code Identification: D0224 Revision: 01

Product Class: CLEAR COATING

Trade Name: CLEAR PRIMER

HMIS Information Health- 2 Flammability- 3

Reactivity- 0 Personal Protective Equipment-

## SECTION II HAZARDOUS INGREDIENTS

N-BUTANOL	71-36-3	3.48	50PPM-CEIL	50 PPN	4.39	1.5	YES	OSHA/ACGIH-SKIN NOTA
TOLUENE	108-88-3	31.32	100 PPH	100 PPM	54.00	1.0	Z3Y	OSHA/ACGIH STEL:150P
METHYL ISOBUTYL KETONE	108-10-1	30.00	50 PPM	50 PPM	28.00	1.4	23Y	OSHA/ACGIH-STEL 75 P
METHANOL	67-56-1	20.01	200 PPM	200 PPM(S)	96.00	6.0	YES	(S)=SKIN: STEL 250 P
INGREDIENT MATERIAL DESCRIPTION	CAS <b></b>	% BY WEIGHT	OSHA-PEL	ACGIH-TLV	VAPOR PRESSURE MMHg @68DF	LEL	SARA 313	OTHER

## SECTION III PHYSICAL DATA

BOILING RANGE, DEG. F HIGH 360.0

LO₩ 148.0

VAPOR PRESSURE. MM HG 96.00

VAPOR DENSITY HEAVIER THAN AIR EVAPORATION RATE SLOWER THAN ETHER

WEIGHT PER GALLON, LBS. 7.2

% VOLATILE BY VOLUME 88.93
% VOLATILE BY WEIGHT 84.87 N/A = NOT APPLICABLE N/E = NOT ESTABLISHED

PH - SOLUBILITY- N/A

MANUFACTURER'S CODE: D0224 Revision: 01

DATE OF PREPARATION- 8/12/92

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA FLAMMABILITY CLASSIFICATION OSHA-CLASS IB DOT- FLAMMABLE LIQUID LOWEST FLASHPOINT T.C.C.. DEG. F 40.0 LOWER EXPLOSION LEVEL (LEL) 1.0

EXTINGUISHING MEDIA: ( )-Foam (XXX)-Alcohol foam (XXX)-CO2 (XXX)-Dry chemical ( )-Water fog ( )-Other SPECIAL FIRE FIGHTING PROCEDURES: Isolate from heat, sparks, electrical equipment and open flame. Water is not usually effective in fighting liquid fires. UNUSUAL FIRE AND EXPLOSION HAZARDS: Water spray may be used to cool closed

containers to help prevent explosion when exposed to extreme heat.

SECTION V -- HEALTH HAZARD DATA

EFFECTS OF DVEREXPOSURE-(ACUTE): Irritating to eyes, skin. nose and throat. Headache, dizziness and nausea can result from inhalation. Repeated or prolonged skin contact may result in dryness possibly leading to dermititis. TOXIC IF INGESTED. NOTE: If methanol is listed in section II-may be fatal or cause blindness if swallowed: cannot be made non-poisonous. If product contains toluene or xylene-may affect liver, kidneys or blood.

EFFECTS OF OVEREXPOSURE-(CHRONIC): Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents of this product may be harmful or fatal. MAY CONTAIN TOLUENE and/or XYLENE WHICH MAY HARM THE DEVELOPING FETUS IF A PREGNANT WOMAN IS EXPOSED. SEE SECTION II FOR INGREDIENT LISTING. DOES THIS PRODUCT CONTAIN ANY CHEMICALS CLASSIFIED AS KNOWN OR SUSPECTED CARCINOGENS (NTP/IARC/OSHA/ACGIH)? ( )-YES (XXX)-NO PRIMARY ROUTE(S) OF ENTRY: (XXX)-INHALATION (XXX)-DERMAL ( )-INGESTION EMERGENCY FIRST AID PROCEDURES: INHALATION-Remove to fresh air. Restore breathing. CONSULT PHYSICIAN. SPLASH(EYE)-Flush with water for at least 15 minutes. CONSULT PHYSICIAN. SPLASH(SKIN)-Wash with soap and water. Remove contaminated clothing. CONSULT PHYSICIAN IF IRRITATION PERSISTS. INGESTION-Drink t or 2 glasses of water to dilute. Do NOT induce vomiting. CONSULT PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY.

MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: Pre-existing skin disorders, chronic respiratory disease.

********************************

SECTION VI -- REACTIVITY DATA

STABILITY: (XXX)-STABLE ( )-UNSTABLE CONDITIONS TO AVOID: None reasonably foreseeable.

INCOMPATIBILITY (MATERIALS TO AVOID): If product contains aluminum-do not contaminate with acids, caustics, chlorinated hydrocarbons or oxidizers as these materials will react with aluminum to produce hydrogen and heat. See Section II (Hazardous Ingredients) to see if product contains aluminum. HAZARDOUS POLYMERIZATION: ( )-WILL OCCUR (XXX)-WILL NOT OCCUR CONDITIONS TO AVOID: None reasonably foreseeable (see materials to avoid). HAZARDOUS DECOMPOSITION PRODUCTS: Mostly CO2 with some CO.

0908-1906

MANUFACTURER'S CODE: D0224 Revision: 01 DATE OF PREPARATION- 8/12/92

SECTION VII -- SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Remove all spark sources, flames and hot surfaces. Maintain adequate ventilation. Avoid breathing vapors. Add absorbent to spill area. Recover free liquid. Keep chemical products out of streams and waterways. WASTE DISPOSAL METHOD: Dispose of in accordance with local, state, and federal regulations.

************************

SECTION VIII -- SAFE HANDLING & USE INFORMATION

RESPIRATORY PROTECTION: Unless air monitoring demonstrates vapor/dust/mist levels below the current PEL or TLV values always wear an appropriate.

properly fitted (NIOSH/MSHA approved) respirator during use.

EYE PROTECTION: Chemical safety goggles (or glasses with side shields) or face shields to prevent eye splashes.

VENTILATION: Should be explosion proof and keep the air contaminant concentration below current OSHA Permissible Exposure Limit (PEL) or ACGIH's Threshold Limit Value (TLV).

PROTECTIVE GLOVES: Required to prevent skin contact.

OTHER PROTECTIVE EQUIPMENT: Remove and wash contaminated clothing before

HYGIENIC PRACTICES: Wash thoroughly before eating, smoking or using toilet

## SECTION IX-- SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Avoid storage in high temperature areas or near fire or open flame. Keep container closed. Use only with adequate ventilation.

OTHER PRECAUTIONS: Avoid contact with eyes and prolonged or repeated contact with skin. DO NOT INGEST. FOR INDUSTRIAL USE ONLY.

THE ABOVE INFORMATION HAS BEEN DERIVED FROM INFORMATION PROVIDED BY OUR RAW MATERIAL SUPPLIERS AND TO OUR BEST BELIEF AND KNOWLEDGE IS FACTUAL.

THESE DATA RELATE ONLY TO THE SPECIFIC MATERIAL DESIGNATED HEREIN AND DO NOT RELATE TO USE IN COMBINATION WITH ANY OTHER MATERIAL.

MSDS:A1 Text Revised 12/89.

Prepared by: L. Dussault

MORTON COATINGS INC. HAYNES CIRCLE CHICOPEE MA. 01002-3794 RECEIVED

AUG 18 1992

AMERICAN ENGINEERING COMP 265 3RD STREET

CAMBRIDGE

MA 02142-0000

ATTENTION:Safety Director

DEAR CUSTOMER.

ENCLOSED PLEASE FIND UPDATED MSDS IN ACCORDANCE WITH THE OSHA HAZARD COMMUNICATION STANDARD (29CFR1910.1200) FOR A PRODUCT YOU RECENTLY ORDERED. IF YOU REQUIRE ANY ADDITIONAL MSDS PLEASE REQUEST BY ENTERING THE PRODUCT ID IN THE SPACES PROVIDED BELOW. FOLD REQUEST WITH RETURN ADDRESS FACING OUTWARD.

REQUEST FOR ADDITIONAL MSDS

LIST PRODUCT NUMBERS

1. ______ 2. ____

THIS PRODUCT CONTAINS A TOXIC CHEMICAL OR CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF SARA TITLE III AND OF 40CFR372 IF "YES" IS PRINTED IN THE COLUMN LABELED SARA 313 IN SECTION II OF THE MSDS.

(STAPLE)

PLACE POSTAGE HERE

AMERICAN ENGINEERING COMP 265 3RD STREET

CAMBRIDGE

MA

02142-0000

MORTON COATINGS INC. HAYNES CIRCLE CHICOPEE NA 01020-3794

0908-1908 TRW-00542

ATTN: LAURIE DUSSAULT



23000 ST. CLAIR AVE. • CLEVELAND, OHIO 44117 • 800-328-9745 EMERGENCY 24 HOUR CHEMTREC NO. 800-424-9300

# MATERIAL SAFETY DATA SHEET

ATTY General Miller 187877

	Section I			
Identity CLEAR TINT BASE ENAMEL	Date Printed NFPA CODE: HEALTH: 3	10/04/88 FLANMABILITY: 3		
Section	n II - Hazardous	Ingredien	ts	<del></del>
Hazardous Ingredients	* CAS #	Health Ha	zards ACGI	H TLV-TWA
BUTYL ALCOHOL (BUTANO METHYL AMYL KETONE N PROPYL ALCOHOL (N P XYLENE ETHYLBENZENE EPOXY RESIN SOLIDS	110-43- NIOSH - 100 ROPANOL) 71-23-8	STEL - *SUSPECT ARCINOGEN FLAMMABLE O COMBUSTIB PPM FLAMMABLE -7 FLAMMABLE O PPM STEL - 4 STEL - 12 NUISANCE	75 PPM CANCER 1. STEL - 2PF 50 LE 50 43 150 PPM 10 DUST 10	PPM C (SI PPM (SK) S MG/CUM PPM MG/CUM
Boiling Point 180-340 D	Spec	ific Gravity(H20=1)	.95	
Vapor Pressure(mm Hg) NOT DETER	·	ent Volatile Volume (%)	75	
Vapor Density (AIR=Reference) HEAVIER		oration Rate her=Reference)	SLOWER	.,
Water Soluble NO				
Appearance and Odor CLEAR LIQUID, MILE	) UDOR			
Section IV	- Fire and Expl	osion Haza	rd Data	
Flash Point (Method Used) 53 DEG F 100		mable Limits EST VALUE	LEL 1.0	VEL
Extinguishing Media	CARBON DIOXIDE. DR	Y CHEMICAL.		
Special Fire Fighting Procedures	IF EXPOSED	TO HEAT, PRE	SSURE WILL	
BUILD UP IN CONTAINER.		0908-190		<b>W-00543</b>

0207300-00 TRW FASTENERS DIVISION



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## MATERIAL SAFETY DATA SHEET

CLEAR TINT BASE ENAMEL

07877

## Section IV - Fire and Explosion Hazard Data Cont.

Unusual Fire and Explosion Hazards

A STRAIGHT WATER STREAM WOULD SPREAD

FIRES. STATIC ELECTRICITY COULD CAUSE IGNITION.

## Section V - Reactivity Data

STABILITY

Unstable Stable

Conditions to Avoid

AVOID PROLONGED STORAGE AT ELEVATED TEMPERATURES.

## INCOMPATIBILITY (Materials to Avoid)

STRONG OXIDIZERS, ALKALIS

## Hazardous Decomposition Products

OXIDES OF CARBON, ORGANIC CMPDS, ACRID FUMES, ALDEHYDES, OTHER ORGANICS

HAZARDXXIS

May Occur

Conditions to Avoid

POLYMERIZATION

Will Not Occur *

NONE

## Section VI - Health Hazard Data

IRRITATING TO EYES, NOSE & THROAT, INHALATION Effects of Overexposure MAY CAUSE DIZZINESS, EXCITEMENT, DROWSINESS & STAGGERING GAIT. INGESTION MAY CAUSE NAUSEA, VOMITING & ABDOMINAL PAIN. EXPOSURE TO HIGH LEVELS OF VAPOR MAY CAUSE REVERSIBLE DAMAGE TO KIDNEYS & LIVER, SKIN RASH & REVERSIBLE EYE DAMAGE, MAY CAUSE HEMOLYSIS & HEMOGLOBINURIA, TARGET ORGANS AFFECTED -CNS, EYES, GI TRACT, BLOOD, LIVER, KIDNEYS & SKIN.

## Emergency and First Aid Procedures

Eve (Contact):

FLUSH EYES WITH COPIOUS AMOUNTS OF WATER FOR 15 MINUTES

AND CONTACT PHYSICIAN IMMEDIATELY.

Skin (Contact):

WASH WITH SOAP AND WATER. CONTACT PHYSICIAN IF

IRRITATION PERSISTS.

Ingestion (Swallowing):

DO NOT INDUCE VOMITING. DRINK LARGE QUANTITIES

OF WATER AND/OR MILK. CONSULT PHYSICIAN IMMEDIATELY.

Inhalation (Breathing):

REMOVE TO FRESH AIR. AID IN BREATHING IF

NECESSARY AND GET IMMEDIATE MEDICAL ATTENTION IF NEEDED.

## Section VII - Precautions for Safe Handling & Use

## Steps to be taken in Case Material is Released or Spilled

WEAR APPROPRIATE PROTECTIVE EQUIPMENT REMOVE IGNITION SOURCES. CONTAIN SPILL: ABSORB WITH INERT MATERIAL AND DISPOSE.

Waste Disposal Method:

DISPOSE IN ACCORDANCE WITH LOCAL, STATE AND

FEDERAL REGULATIONS.

0908-1910



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## MATERIAL SAFETY DATA SHEET

CLEAR TINT BASE ENAMEL

07877

Section VII - Precautions for Safe Handling & Use Cont.

Handling and Storage

DO NOT STORE OR USE NEAR HEAT, SPARKS, OR FLAME. DO NOT STORE NEAR COMBUSTIBLE MATERIAL. DO NOT STORE IN DIRECT SUNLIGHT. WHEN SANDING DRY FILM, USE NIOSH APPROVED DUST MASK, KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE.

Other Precautions

SHOWERS AND EYE WASH FOUNTAINS SHOULD BE MADE

AVAILABLE WHERE CHEMICALS ARE USED.

Section VIII - Control Measures

Respiratory Protection (Specify Type)

USE NIOSH APPROVED EQUIPMENT WHEN AIRBORNE EXPOSURE LIMITS ARE EXCEEDED.

**VENTILATION** 

Local

RECOMMENDED TO MAINTAIN BELOW TLV

Merhanical

Eve Protection

NEOPRENE RUBBER

Protective Gloves

SPLASH GOGGLES OR FACE SHIELD

Other Protective Clothing or Equipment

PROTECTIVE CLOTHING SUFFICIENT TO PREVENT SKIN CONTACT

Work/Hygienic Practices

WASH THOROUGHLY BEFORE EATING, SMOKING OR USING TOILET FACILITIES

0908-1911

TRW-00545

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THU FASTENERS DIVISION

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## **MATERIAL SAFETY DATA SHEET**

	Secti	on I				08221	
Identity	Date Prepared			Date Revised	24 (22 (22		
CLEAR W.R. AIR DRY	NFPA CODE HEALTH	<u> 12/16</u> 2	/86	FLAMMABILITY	01/02/86 1 REACTIVI		
Section II -		dous	Inaredi	<del></del>		-	
	<del></del>				T		
Hazardous Ingredients	CAS	5 # 	Healt	h Hazards	ACGIH TLV	- TWA	
BUTYL CELLOSOLVE	111-76-	-2	SKIN		120 MG/CU	M	
(2-BUTOXYETHANOL)	7664-90	ð-5			18 MG/CUM		
					55115		
NO COMPONENT WAS FOUND TO BE O							
Section III — Phy					;s 		
Boiling Point	St	ecific Grav	vity (H2O = 1	) 1.01			
340-477 DEG F Vapor Pressure (mm Hg)	Pe	rcent Volat	tile	1.01			
NOT DETERMINED  Vapor Density (AIR = Reference)	By Volume (%) 78						
HEAVIER	Evaporation Rate (Ether = Reference)			SINU	OWER		
Water Soluble	,		· · · · · · · · · · · · · · · · · · ·		<del></del>		
YES Appearance and Odor							
CLEAR LIQUID. MILD ODOR						:	
Section IV — Fir	re and F	xninsi	on Haz	ard Data			
Flash Point (Method Used)		-	mmable Lim		LEL	UEL	
ABOVE 200 DEG F TCC		1		ICABLE			
Extinguishing Media CARBON DIOXII	DE. DRY						
Special Fire Fighting Procedures	EXPOSE	то н	FOT. F	RESSURE	WILL BUILD	UP IN	
CONTAINER.		<u></u>					
Unusual Fire and Explosion Hazards				STREAM	WOULD SPRE	AD	
FIRES. STATIC ELECTRICITY COUL	_D CAUSE	LIGNI	I LUN.		TD337 0064		

f

MATERIAL SAFETY DATA SHEET 08221 CLEAR W.R. AIR DRY Section V — Reactivity Data STABILITY Conditions to Avoid Unstable Stable AVOID PROLONGED STORAGE AT ELEVATED TEMPERATURES INCOMPATIBILITY (Materials to Avoid) STRONG DXIDIZERS. (Hazardous Decomposition Products ALKALINE MATERIALS DXIDES OF CARBON, VARIOUS HYDROCARBONS Conditions to Avoid **HAZARDOUS** May Occur **POLYMERIZATION** Will Not Occur NONE Section VI — Health Hazard Data Effects of Overexposure MILD SKIN IRRITANT. HARMFUL IF SWALLOWED. IRRITATING TO THE EYES. INHALATION MAY CAUSE HEADACHE, NAUSEA, AND DIZZINESS. **Emergency and First Aid Procedures** Eve (Contact): FLUSH EYES WITH COPIOUS AMOUNTS OF WATER FOR 15 MINUTES AND CONTACT PHYSICIAN IMMEDIATELY. Skin (Contact): WASH WITH SOAP AND WATER. CONTACT PHYSICIAN IRRITATION PERSISTS. Ingestion (Swallowing): DRINK LARGE QUANTITIES OF DO NOT INDUCE VOMITING. CONSULT PHYSICIAN IMMEDIATELY. WATER AND/OR MILK.
Inhalation (Breathing): REMOVE TO FRESH AIR. Section VII — Precautions for Safe Handling & Use Steps to be taken in Case Material is Released or Spilled CONTAIN SPILL. ABSORB AND DISPOSE WASTE. Waste Disposal Method: DISPOSE IN ACCORDANCE WITH LOCAL, STATE AND REGULATIONS. FEDERAL Precautions To be Taken in Handling and Storage DO NOT STORE OR USE NEAR HEAT, SPARKS, OR FLAME. DO NOT STORE NEAR COMBUSTIBLE MATERIAL. DO NOT STORE IN DIRECT SUNLIGHT. WHEN SANDING DRY FILM, USE NIOSH APPROVED DUST MASK, KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. SHOWERS AND EYE WASH FOUNTAINS SHOULD BE MADE AVAILABLE WHERE CHEMICALS ARE USED. Section VIII — Control Measures Respiratory Protection (Specify Type) JSE NIOSH APPROVED EQUIPMENT WHEN AIRBORNE EXPOSURE LIMITS ARE EXCEEDED. Ventilation Local RECOMMENDED TO MAINTAIN BELOW TLV Mechanical **Protective Gloves** Eye Protection <u>SPLASH GOGGLES OR FACE SHIELD</u> NEOPRENE RUBBER Other Protective Clothing or Equipment

PROTECTIVE CLOTHING SUFFICIENT TO PREVENT SKIN CONTACT.

Work/Hygienic Practices

WASH THOROUGHLY BEFORE EATING, SMOKING OR USING TOILET FACILITIES.

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# **MATERIAL SAFETY DATA SHEET**

	Secti	on I			,		0784	10
Identity	Date Prepared	12/1	6/86	Date Revise	d 12/	06/85		
CLEAR W/R FINISH	NEPA CODE. HEALTH:	2		FLAMMABILIT		REACTIVI	ry <b>1</b>	
Section II	— Haza	rdous	Ingre	dients				
Hazardous Ingredients	CAS	S #	Не	ealth Hazards	AC	GIH TLV	- TWA	
BUTYL CELLOSOLVE (2-BUTOXYETHANOL)	111-76	-2	SKIN		120	MG/CUI	<b>M</b>	
AMMONIA	7664-9	0-5			18 1	16/CUM		
						•		
NO COMPONENT WAS FOUND TO BE	ARCINO	GENIC	IN N	TP, IARC OF	OSHA	4		
Section III — Ph								
Boiling Point	- <u>.</u>		avity (H2O				······································	
340 - 477 DEG F				0.99	<del>)</del>			
Vapor Pressure (mm Hg) NOT DETERMINED		ercent Vol y Volume		78. 5	5 +/-	1.0		
Vapor Density (AIR = Reference)	E	Evaporation Rate						
HEAVIER	(E	ther = Ref	erence)	SLO	IER			
Water Soluble								
YES Appearance and Odor	I	<del></del>				·		
CLEAR LIQUID, MILD ODOR								
Section IV Fire	re and E	xpios	ion Ha	azard Data				
Flash Point (Method Used)		F	ammable	Limits		LEL	UEL	
ABOVE 200 DEG F		L	OWEST	VALVE		0.9		
Extinguishing Media CARBON DIOXII	DE. DRY	CHEM	ICAL.					
Special Fire Fighting Procedures IF	EXPOSE	סד מ	HEAT,	PRESSURE	WILL	BUILD	UP I	I N
Unusual Fire and Explosion Hazards	A ST	RAIGH	T WAT	ER STREAM	WOULI	SPRE	AD	_
FIRES. STATIC ELECTRICITY COUL								

MATERIAL SAFETY DATA SHEET 07840 CLEAR W/R FINISH Section V — Reactivity Data STABILITY Conditions to Avoid Unstable Stable AVOID PROLONGED STORAGE AT ELEVATED TEMPERATURES INCOMPATIBILITY (Materials to Avoid) OLKALIES, STRONG OXIDIZERS
Hazardous Decomposition Products CO, CO2, HYDROCARBONS Conditions to Avoid HAZARDOUS May Occur **POLYMERIZATION** Will Not Occur NONE Section VI — Health Hazard Data Effects of Overexposure MILD SKIN IRRITANT. HARMFUL IF SWALLOWED. IRRITATING TO THE EYES. INHALATION MAY CAUSE HEADACHE, NAUSEA, AND DIZZINESS. **Emergency and First Aid Procedures** Eye (Contact): FLUSH EYES WITH COPIOUS AMOUNTS OF WATER FOR 15 MINUTES AND CONTACT PHYSICIAN IMMEDIATELY. Skin (Contact): WASH WITH SOAP AND WATER. CONTACT PHYSICIAN IRRITATION PERSISTS. Ingestion (Swallowing): DRINK LARGE QUANTITIES OF WATER AND/OR MILK. INDUCE VOMITING. (Inhalation (Breathing): CONSULT PHYSICIAN IMMEDIATELY. REMOVE TO FRESH AIR. Section VII — Precautions for Safe Handling & Use Steps to be taken in Case Material is Released or Spilled CONTAIN SPILL. ABSORB AND DISPOSE WASTE. Waste Disposal Method: DISPOSE IN ACCORDANCE WITH LOCAL, STATE AND REGULATIONS. FEDERAL Precautions To be Taken in Handling and Storage DO NOT STORE OR USE NEAR HEAT, SPARKS, OR FLAME. DO NOT STORE NEAR COMBUSTIBLE MATERIAL. DO NOT STORE IN DIRECT SUNLIGHT. WHEN SANDING DRY FILM, USE NIOSH APPROVED DUST MASK. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. Other Precautions: SHOWERS AND EYE WASH FOUNTAINS SHOULD BE MADE AVAILABLE WHERE CHEMICALS ARE USED. Section VIII — Control Measures Respiratory Protection (Specify Type) USE NIOSH APPROVED EQUIPMENT WHEN AIRBORNE EXPOSURE LIMITS ARE EXCEEDED. Ventilation Local RECOMMENDED TO MAINTAIN BELOW TLV Mechanical Eye Protection **Protective Gloves** <u>SPLASH GOGGLES OR FACE SHIELD</u> <u>NEOPRENE RUBBER</u> Other Protective Clothing or Equipment PROTECTIVE CLOTHING SUFFICIENT TO PREVENT SKIN CONTACT. Work/Hygienic Practices WASH THOROUGHLY BEFORE EATING, SMOKING OR USING TOILET FACILITIES.

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#### PAINT GROUP

214 Northfield Road Cleveland, Ohio 44146 216 - 232-3800

December 17, 1986

RECEIVED

JAN 05 1987

Mr. Dick Norcross TRW/CARR FASTENER DIVISION 195 Binney Street Cambridge, MA 02142

D. F. BORSUK

Dear Mr. Norcross:

As requested by Walter Rish, you will find enclosed Product Data and Material Safety Data Sheets pertaining to Man-Cill products 07840, 08219, and 08221.

Should you have any further questions, please feel free to contact us.

Sincerely,

MAN-GILL CHEMICAL COMPANY

mark T. Messerl Mark T. Messerly Chemist

MTM/ab

cc: Walter A. Rish

D. F. BORSUK

TRW-00550

Denne Samples for testing in

## MATERIAL SAFETY DATA

SECTION 1 - IDENTIFICATION DATA 

FREDERICK GUMPT CHEMICAL COMPANY. INC.

538 Forest Street, Kearny, NJ 07032

CLEPO BLACK WAX

Emergency Telephone Numbers: 8:00 AM - 5:00 PM EST

(201) 991-4174-

24 Hrst. (313), 644-5626

D.O.T. HAZARD CLASS

- Chemical NOS

Effective Date:

CHEMICAL FAMILY

- WATER WAX EMULSION

01-31-90

CHEMICAL NAME/SYNONYMS - CLEPO-BLASH-WAX FORMULA

- Mixture

MEDS REVIEWED BY

- Keith Frey, V.P. Quality & Regulatory Affairs

SECTION 2 - PHYSICAL DATA

_________

BOILING POINT (Deg F)

- >212 deg F

VAPOR PRESSURE (mm Hg) VAPOR DENSITY (air=1)

- NA - NA

SOLUBILITY IN WATER

- Complete

SPECIFIC GRAVITY (H20=1) - Apprx. .99

VOLATILE BY VOLUME

- NA

EVAPORATION RATE (H20=1) - >1

PEARANCE & ODOR:

ACK LIQUID WITH NO ODOR

_______ SECTION 3 - FIRE AND EXPLOSION DATA

_______

FLASH POINT - None

EXTINGUISHING MEDIA:

This product is not combustible.

SPECIAL FIRE FIGHTING PROCEDURES:

Protective clothing and self-contained breathing apparatus should be worn by firefighters in areas where product is stored. Water spray, foam, dry chemical, or carbon dioxide may be used in areas where product is stored.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None

NFPA HAZARD CLASSIFICATION:

DEGREE OF HAZARD

Health (Blue) Flammability (Red)

Reactivity (Yellow) - 0

3=High 2=Moderate 1=Slight

4=Extreme

O=Insignficant

TRW-00551

page: 1

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Material Safety Data Sheet for CLEPO BLACK WAX

SECTION 4 - REACTIVITY DATA

ABILITY: Stable

CONDITIONS TO AVOID: NA

INCOMPATIBILITY:

MA

HAZARDOUS DECOMPOSITION PRODUCTS:

None expected

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: NA

SECTION 5 - HAZARDOUS COMPONENTS

PAINTS, PRESERVATIVES, AND SOLVENTS:

NA

ALLOYS AND METALLIC COATINGS:

MH

HAZARDOUS COMPONENTS

CAS NUMBER TLV PEL LD50 %

NONE

- V = Mg/M3 PEL = Mg/M3 LD50 = oral, rat, Mg/Kg NF = None Found
- # The indicated material, if any, is listed as a carginogen or potential carginogen by one or more of the following: National Toxicology Program, I.A.R.C. Monographs, OSHA.
- ** The indicated material, if any, does not have an established TLV, but does appear on one or more of the following states hazardous substance lists: Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Wisconsin, and is present in this product in amounts greater than 1%.
- & The indicated material, if any, is subject to the reporting requirements of SARA Title III, Section 313

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

#### SPILL & LEAK PROCEDURES:

Liquids should be contained and adsorbed with a suitable adsorbent, or flushed to the waste treatment area. Flush area with plenty of water. Avoid all personal contact.

#### WASTE DISPOSAL METHODS:

Waste solution should not be discharged into sewers or streams. Solution should first be neutralized to a locally acceptable pH, and then well diluted with water. Depending on usage and locality, may also require precipitation and filtration of heavy metals. Otherwise, contact local

Material Safety Data Sheet for CLEPO BLACK WAX

__________

TRW-00552 page: 2

_____

************ 

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES continued

waste disposal contractor.

#### SECTION 7 - HEALTH HAZARD DATA

#### ROUTES OF EXPOSURE

INHALATION: Inhaling mist or spray is irritating to the upper respiratory tract and depending on the severity of exposure, may cause tissue damage. May also cause a decrease in alertness.

SKIN CONTACT: This product is irritating to tissues contacted and may cause skin damage.

SKIN ABSORPTION: See SKIN CONTACT above.

EYE CONTACT: This product is irritating to eye tissues on contact. May cause permanent eye damage.

INGESTION: This product, if swallowed, will be irritating to the mouth, throat, and stomach.

#### EFFECTS OF OVEREXPOSURE

F-'ITE: Irritating to all body tissues with which it comes in contact.

CHRONIC: Repeated or prolonged exposure may cause dermatitis.

## EMERGENCY AND FIRST AID PROCEDURES

- EYES: IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within 1 minute is essential to achieve maximum effectiveness. Seek medical attention immediately.
- SKIN: Immediately wash contaminated areas with plenty of water for 15 minutes. Remove contaminated clothing and footwear, and wash clothing before reuse. Discard any clothing that can not be decontaminated. Seek medical attention immediately.
- INHALATION: Get person out of contaminated area to fresh air. If breathing has scopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.
- INGESTION: NEVER give anything by mouth to an unconscious person. If swallowed, do not induce vomiting. Give large quantities of water. If vomiting occurs spontaneously, keep airway clear. Seek medical attention immediately.

## 

#### SECTION 8 - SPECIAL HANDLING PROCEDURES

PIRATORY: Respiration protection is not required under normal use.
Use NIOSH/MSHA approved respirator where mist or spray may be generated above the TLV limit.

**VENTILATION:** Use adequate local exhaust ventilation where mist or spray may be generated, to maintain level below the TLV limit.

GLOVES: Impervious gloves should be worn (ex. nubber or neoprene).

EYES: Chemical safety goggles and/or face shield.

OTHER: Chemically resistant shoes and apron. Safety showers and eyewash facilities should be accessible. All contaminated clothing should be washed with soap and water, and dried before reuse.

#### SECTION 9 - SPECIAL PRECAUTIONS

#### HANDLING AND STORAGE PRECAUTIONS::

Avoid contact with skin and eyes. Wash thoroughly after handling material. Store in a cool, dry area, in a closed container when not being used. DO NOT STORE with strong acids & oxidizers, chlorinated organic compounds.

#### OTHER PRECAUTIONS:

Keep container tightly closed when not in use. Wash thoroughly after handling. Containers, even those that have been emptied, will retain product residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Containers must not be used for any other purpose.



The information herein is based on technical data that is believed to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warrenties, expressed or implied, and assume no liability in connection with the use of this information.

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TRW-00554 page: 4

# U.S. DEPARTMENT OF LABOR Occupational Safety & Health Administration MATERIAL SAFETY DATA SHEET

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UNUSUAL FIRE AND EXPLOSION HAZARDS						3.00 <b>3</b> .00

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

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## MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTIFICATION DATA

FREDERICK GUMM CHEMICAL COMPANY, INC. 538 Forest Street, Kearny, NJ 07032

CLEPO DRG-49

Emergency Telephone Numbers:

8:00 AM - 5:00 PM EST

(201) 991-4174

24 Hrs: (313) 644-5626

D.O.T. HAZARD CLASS

- Chemical NOS

- Plating bath additive

Effective Date: 2-13-87

CHEMICAL FAMILY

CHEMICAL NAME/SYNONYMS - CLEPO DRG-49

FORMULA

- Mixture

MSDS REVIEWED BY

- Keith Frey, V.P. Quality & Regulatory Affairs

SECTION 2 - PHYSICAL DATA

BOILING POINT (Deg F) VAPOR PRESSURE (mm Hg)

- NA

VAPOR DENSITY (air=1)

- NA

SOLUBILITY IN WATER

- Complete

- Over 212 deg F

SPECIFIC GRAVITY (H20=1) - 1.13

VOLATILE BY VOLUME

EVAPORATION RATE (H2O=1) - >1

EARANCE & ODOR: Cléar to tan liquid

SECTION 3 - FIRE AND EXPLOSION DATA 

FLASH POINT - None

EXTINGUISHING MEDIA:

This product is not combustible.

SPECIAL FIRE FIGHTING PROCEDURES:

Protective clothing and self-contained breathing apparatus should be worn by firefighters in areas where product is stored. Water spray, foam, dry chemical, or carbon dioxide may be used in areas where product is stored.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None

NFPA HAZARD CLASSIFICATION:

DEGREE OF HAZARD

Health

(Blue)

Flammability (Red)

≥Reactivity (Yellow) - 1

2=Moderate

4=Extreme

TRW-00557

1=Slight

3=High

O=Insignficant

Material Safety Data Sheet for CLEPO DRG-49

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SECTION 4 - REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: NA

INCOMPATIBILITY:

Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS:

None expected

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: NA

SECTION 5 - HAZARDOUS COMPONENTS

PAINTS, PRESERVATIVES, AND SOLVENTS:

NΔ

ALLOYS AND METALLIC COATINGS:

NA

HAZARDOUS COMPONENTS

CAS NUMBER TLV PEL LD50 >

NONE

= Mg/M3 - PEL = Mg/M3 - LD50 = oral, rat, Mg/Kg - NF = None Found

- # The indicated material, if any, is listed as a carginogen or potential carginogen by one or more of the following: National Toxicology Program, I.A.R.C. Monographs, OSHA.
- ** The indicated material, if any, does not have an established TLV, but does appear on one or more of the following states hazardous substance lists: Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Wisconsin, and is present in this product in amounts greater than 1%.
- & The indicated material, if any, is subject to the reporting requirements of SARA Title III, Section 313

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

## SPILL & LEAK PROCEDURES:

Liquids should be contained and adsorbed with a suitable adsorbent, or flushed to the waste treatment area. Flush area with plenty of water. Avoid all personal contact.

#### WASTE DISPOSAL METHODS:

Waste solution should not be discharged into sewers or streams. Solution should first be neutralized to a locally acceptable pH, and then well diluted with water. Depending on usage and locality, may also require precipitation and filtration of heavy metals. Otherwise, contact local

Material Safety Data Sheet for CLFPO non 'C

page: 2

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	SECTION	6 -	SPILL,	LEAK,	AND	DISPOSAL	PROCEDURES	continued	
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#### ROUTES OF EXPOSURE

INHALATION: Inhaling mist or spray is irritating to the upper respiratory tract and depending on the severity of exposure, may cause tissue damage. May also cause a decrease in alertness.

SKIN CONTACT: This product is irritating to tissues contacted and may cause skin damage.

SKIN ABSORPTION: See SKIN CONTACT above.

EYE CONTACT: This product is irritating to eye tissues on contact. May cause permanent eye damage.

INGESTION: This product, if swallowed, will be irritating to the mouth, throat, and stomach.

#### EFFECTS OF OVEREXPOSURE

( TE: Irritating to all body tissues with which it comes in contact.

CHRONIC: Repeated or prolonged exposure may cause dermatitis.

#### EMERGENCY AND FIRST AID PROCEDURES

EYES: IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within 1 minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

SKIN: Immediately wash contaminated areas with plenty of water for 15 minutes. Remove contaminated clothing and footwear, and wash clothing before reuse. Discard any clothing that can not be decontaminated. Seek medical attention immediately.

INHALATION: Get person out of contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.

INGESTION: NEVER give anything by mouth to an unconscious person. If swallowed, do not induce vomiting. Give large quantities of water. If vomiting occurs spontaneously, keep airway clear. Seek medical attention immediately.

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### SECTION 8 - SPECIAL HANDIANG PROCEDURES

### SECTION 8 - SPECIAL HANDLING PROCEDURES

PIRATORY: Respiration protection is not required under normal use.

Jse NIOSH/MSHA approved respirator where mist or spray may be generated above the TLV limit.

VENTILATION: Use adequate local exhaust ventilation where mist or spray may be generated, to maintain level below the TLV limit.

GLOVES: Impervious gloves should be worn (ex. rubber or neoprene).

EYES: Chemical safety goggles and/or face shield.

OTHER: Chemically resistant shoes and apron. Safety showers and eyewash facilities should be accessible. All contaminated clothing should be washed with soap and water, and dried before reuse.

### SECTION 9 - SPECIAL PRECAUTIONS

### HANDLING AND STORAGE PRECAUTIONS::

Avoid contact with skin and eyes. Wash thoroughly after handling material. Store in a cool, dry area, in a closed container when not being used.

DO NOT STORE with strong acids & oxidizers, chlorinated organic compounds.

### OTHER PRECAUTIONS:

Keep container tightly closed when not in use. Wash thoroughly after andling. Containers, even those that have been emptied, will retain product residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Containers must not be used for any other purpose.

TRW-00560

The information herein is based on technical data that is believed to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warrenties, expressed or implied, and assume no liability in connection with the use of this information.

7.04

### MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTIFICATION DATA FREDERICK GUMM CHEMICAL COMPANY, INC. | Emergency Telephone Numbers: 8:00 AM - 5:00 PM K996 ... 538 Forest Street, Kearny, NJ 07032 (201) 991-4174 ... CLEPO PLUS 5 24 Hrs: (313) 644-5626 D.O.T. HAZARD CLASS - Chemical Solid NOS Effective Date: CHEMICAL FAMILY - Alkaline cleaner 02-13-90 CHEMICAL NAME/SYNONYMS - CLEPO PLUS 5 - Mixture FORMULA MSDS REVIEWED BY - Keith Frey, V.P. Quality & Regulatory Affairs SECTION 2 - PHYSICAL DATA BOILING POINT (Deg F) -NAVAPOR PRESSURE (mm Hg) - NA VAPOR DENSITY (air=1) -NASOLUBILITY IN WATER - Complete to 32 oz/gal SPECIFIC GRAVITY (H20=1) - NA VOLATILE BY VOLUME - NA EVAPORATION RATE (H2O=1) - NA APPEARANCE & ODOR: Off white powder SECTION 3 - FIRE AND EXPLOSION DATA FLASH POINT - None EXTINGUISHING MEDIA: This product is not combustible. SPECIAL PIRE PIGHTING PROCEDURES: Protective clothing and self-contained breathing apparatus should be worn by firefighters in areas where product is stored. Water spray, foam, dry chemical, or carbon dioxide may be used in areas where product is stored. UNUSUAL FIRE AND EXPLOSION HAZARDS: None NEPA HAZARD CLASSIFICATION: DEGREE OF HAZARD ______ (Blue) - 1 4=Extreme Health Flammability (Red) 3=High TRW-00561 Reactivity (Yellow) - 1 2=Moderate 1=Slight 0=Insignficant

Material Safety Data Sheet for CLEPO PLUS 5

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page: 1

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SECTION 4 - REACTIVITY DATA STABILITY: Stable CONDITIONS TO AVOID: NA INCOMPATIBILITY: Strong acids HAZARDOUS DECOMPOSITION PRODUCTS: None HAZARDOUS POLYMERIZATION: Will not occur CONDITIONS TO AVOID: NA SECTION 5 - HAZARDOUS COMPONENTS PAINTS, PRESERVATIVES, AND SOLVENTS: ALLOYS AND METALLIC COATINGS: NAHAZARDOUS COMPONENTS CAS NUMBER PEL LD50 TLV 76 46.0 Sodium Silicate 6834-92-0 C = 2600 4000 Tetrasodium Pyrophosphate 7722-88-5 5 5.00 NE650 1.25 Sodium Dodecylbenzene Sulfonate 25155-30-0 NFNE

TLV = Mg/M3 -PEL = Mg/M3- LD50 = oral, rat, Mg/Kg -NF = None Found

# - The indicated material, if any, is listed as a carginogen or potential carginogen by one or more of the following: National Toxicology Program, 1.A.R.C. Monographs, OSHA.

** - The indicated material, if any, does not have an established TLV, but does appear on one or more of the following states hazardous substance lists: Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Wisconsin, and is present in this product in amounts greater than 1%.

& - The indicated material, if any, is subject to the reporting requirements of SARA Title III, Section 313

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES 

### SPILL & LEAK PROCEDURES:

Spilled material may be shoveled up, and stored in closed containers for possible normal use or proper disposal. Flush area with plenty of water.

TRW-00562

:========== ________ 0908-1928 page: 2

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES continued 

### WASTE DISPOSAL METHODS:

Waste should not be discharged directly into sewers or streams. Neutralize to a locally acceptable pH, depending on usage and locality. May also require precipitation and filtration of heavy metals.

### SECTION 7 - HEALTH HAZARD DATA

### 

### ROUTES OF EXPOSURE

Coughing, sneezing, or other symptoms of upper respiratory tract irritation may occur. Severe exposure may result in lung tissue damage.

Dry product can be a skin irritant. May cause severe burns SKIN CONTACT: if not washed immediately.

SKIN ABSORPTION: NZA

EYE CONTACT: Dry product can cause tissue destruction and permanent eye damage if not treated immediately.

Dry product burns mucous membranes of the mouth, throat, esophagus, and stomach.

### EFFECTS OF OVEREXPOSURE

ACUTE: Burns the mucous membranes of the respiratory tract, mouth, throat, esophagus, and stomach. Burns to eye and skin and possible permanent corneal damage.

The chronic local effect may consist of multiple areas of superficial destruction of the skin or of primary irritant dermatitis. Similarly, inhalation of spray or mists may result in varying degrees of irritation.

### EMERGENCY AND FIRST ALD PROCEDURES

IMMEDIATELY flush eyes with large amounts of water for at least 15 EYES: minutes holding lids apart to ensure flushing of the entire surface. Washing eyes within one minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

Wash with plenty of water for 15 minutes. Remove contaminated clothing and footwear, and wash clothing before reuse. Discard any piece of clothing or footwear that can not be decontaminated. Seek medical attention if symptoms are present.

Get person out of contaminated area to fresh air. INHALATION:

INGESTION: NEVER give anything by mouth to an unconscious person. If swallowed, DO NOT INDUCK VOMITING. Give large quantities of water. available, give several glasses of milk. If vomiting occurs spontaneously, keep airway clear. Seek medical attention immediately.

Material Safety Data Sheet for CLEPO PLUS 5

SHOOMOONES	DNITONVE TVIDMAS - 8 NOLLOWS

RESPIRATORY: Respiration protection is not required under normal use. Use NIOSH/MSHA approved respirator where dust, mist, or spray may be generated above Tru limit.

very their Case adequate local exhaust ventilation where dust, mist, or garage may be generated to maintain level below T.W. Timit.

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Avoid contact with the ekin and eyes. Wash thoroughly after handling.

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OTHER PRECAUTIONS:

Keep container tightly closed when not in use. Wash thoroughly after
handling. Containers, even those that have been emptied, will retain
product residue and vapors. Always obey hazard warnings and handle em

product residue and vapors. Always obey hazard warrings and handle empty containers as if they were full. Containers must not be used for any other purpose.

at their own discretion and risk. Since conditions of use are outside on their our control, we make no warrenties, expressed or implied, and assume no liability in connection with the use of this information.

The information herein is based on technical data that is believed to be reliable. It is intended for use by persons having technical skill and

waterial Safety Data Sheet for CLRPO PLUS 5

### MATERIAL SAFETY DATA

SECTION 1 - IDENTIFICATION DATA

FREDERICK GUMM CHEMICAL COMPANY, INC. 538 Forest Street, Kearny, NJ 07032

CLEPO 39-NN

Emergency Telephone Numbers: CHEMTREC 800-424-9300 (24HR) 8:00 AM - 5:00 PM EST 201-991-4174 Information

Effective Date:

D.O.T. HAZARD CLASS - Cleaner Liquid NDS CHEMICAL FAMILY

- Alkaline Rust Inhibitor

01-12-90

CHEMICAL NAME/SYNONYMS - CLEPO 39-NN

FORMULA

- Mixture

MSDS REVIEWED BY

- Keith Frey, V.F. Quality & Regulatory Affairs

SECTION 2 - PHYSICAL DATA

BOILING POINT (Deg F) - Over 212 dea F

VAPOR PRESSURE (mm Ha) - NA VAPOR DENSITY (air=1)

- NA

SOLUBILITY IN WATER

- Complete

SPECIFIC GRAVITY (H20=1) - 1.04

VOLATILE BY VOLUME - 78%

EVAPORATION RATE (H20=1) - <1

APPEARANCE & ODOR:

Post-It brand fax transmittal memo 7671 # of pages > From N1: 4 Dept. Phone # 22 1002 Fax #

Clear to vellow liquid

SECTION 3 - FIRE AND EXPLOSION DATA

FLASH POINT -- None

EXTINGUISHING MEDIA:

This product is not combustible. See SPECIAL FIRE FIGHTING PROCEDURES.

SPECIAL FIRE FIGHTING PROCEDURES:

Protective clothing and self-contained breathing apparatus should be worn by firefighters in areas where product is stored. Water spray, foam, dry chemical, or carbon dioxide may be used in areas where product is stored.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

NFPA HAZARD CLASSIFICATION:

Health (Blue) Flammability (Red)

Reactivity (Yellow) - 1 DEGREE OF HAZARD

4=Extreme 3=Hiah

2≃Moderate 1=Slight

O=Insignficant

0908-1931

SECTION 4 - REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: NA

INCOMPATIBILITY:

Strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS:

None expected.

HAZARDOUS POLYMERIZATION: Will not accur

CONDITIONS TO AVOID: NA

SECTION 5 ~ HAZARDOUS COMPONENTS

PAINTS, PRESERVATIVES, AND SOLVENTS:

ALLOYS AND METALLIC COATINGS:

NA

HAZARDOUS COMPONENTS

CAS NUMBER

TLV PEL LD50 3.96

Mono Ethanol Amine (Ethanolamine)

141.43-5

3 NF 2100

TLV = Mg/M3 - PEL = Mg/M3 - LD50 / oral, rat, Mg/Kg - NF = None Found

# - The indicated material, if any, is listed as a carginogen or potential carginogen by one or more of the following: National Toxicology Program, I.A.R.C. Monographs, OSHA.

** - The indicated material, if any, does not have an estabished TLV, but does appear on one or more of the following states hazardous substance lists: Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Dregon, Rhode Island, West Yirginia, and Wisconsin, and is present in this product in amounts greater than 1%.

& - The indicated material, if any, is subject to the reporting requirements of SARA Title III, Section 313

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES CETETEDE CON CONTRETE DE CONTRETE DE CONTRETE CONTRETE CONTRETE DE CONTRETE DE CONTRETE DE CONTRETE DE CONTRETE

### SPILL & LEAK PROCEDURES:

Liquids should be contained and adsorbed with a suitable adsorbent, or flushed to the waste treatment area. Flush area with plenty of water. Avoid all personal contact.

TRW-00566

0908-1932

### WASTE DISPOSAL METHODS:

Waste solution should not be discharged into sewers or streams. Solution should first be neutralized to a locally acceptable pH, and then well diluted with water. Depending on usage and locality, may also require precipitation and filtration of heavy metals. Otherwise, contact local

Matarial Galati Mata Gualt II. Alton in the

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES continued

waste disposal contractor.

SECTION 7 - HEALTH HAZARD DATA

### ROUTES OF EXPOSURE

INHALATION: Inhaling mist or spray is irritating to the upper respiratory tract and depending on the severity of exposure, may cause tissue damage.

SKIN CONTACT: This product is irritating to tissues contacted and may cause skin damage.

SKIN ABSORPTION: See SKIN CONTACT above.

EYE CONTACT: This product is irritating to eye tissues on contact. May cause permanent eye damage.

INGESTION: This product, if swallowed, will be irritating to the mouth, throat, and stomach.

### EFFECTS OF OVEREXPOSURE

ACUTE: Irritating to all body tissues with which it comes in contact.

CHRONIC: Repeated or prolonged exposure may cause dermatitis.

### EMERGENCY AND FIRST AID PROCEDURES

EYES: IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within 1 minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

SKIN: Immediately wash contaminated areas with plenty of water for 15 minutes. Remove contaminated clothing and footwear, and wash clothing before reuse. Discard any clothing that can not be decontaminated. Seek medical attention immediately.

INHALATION: Get person out of contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.

INGESTION: NEVER give anything by mouth to an unconscious person. If swallowed, do not induce vomiting. Give large quantities of water. If vomiting occurs spontaneously, keep airway clear. Seek medical attention immediately.

TRW-00567

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### SECTION 8 - SPECIAL HANDLING PROCEDURES

RESPIRATORY: Respiration protection is not required under normal use.

Use NIOSH/MSHA approved respirator where mist or spray may be generated above the TLV limit.

VENTILATION: Use adequate local exhaust ventilation where mist or spray may be generated, to maintain level below the TLV limit.

GLOVES: Impervious gloves should be worn (ex. rubber or neoprene).

EYES: Chemical safety goggles and/or face shield.

OTHER: Chemically resistant shoes and apron. Safety showers and eyewash facilities should be accessible. All contaminated clothing should be washed with soap and water, and dried before reuse.

SECTION 9 - SPECIAL PRECAUTIONS

### HANDLING AND STORAGE PRECAUTIONS::

Avoid contact with skin and eyes. Wash thoroughly after handling material. Store in a cool, dry area, in a closed container when not being used. DO NOT STORE with strong acids.

### OTHER PRECAUTIONS:

Keep container tightly closed when not in use. Wash thoroughly after handling. Containers, even those that have been emptied, will retain product residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Containers must not be used for any other purpose.

TRW-00568

The information herein is based on technical data that is believed to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warrenties, expressed or implied, and assume no liability in connection with the use of this information.

### therick bumm Chemical Company, Inc. a POREST STREET, KEARNY, NEW JERSEY 07032

### U.S. DEPARTMENT OF LABOR WORKPLACE STANDARDS ADMINISTRATION BUREAU OF LABOR STANDARDS

Cape 603 MAY 1971

MDC CONTROL NO.___

0908-1935

TRW-00569

### MATERIAL SAFETY DATA SHEET

SECTION	I: MAT	ERIAL AND M	ANUFACTURER IDENTIFICAT	TION			
HUFACTURER'S NAME Frederick Gumm	Cher			EMER	GENCY TELE 01-991-4		E NO.
DRESS (NUMBER, STREET, CITY, STATE AND ZIP C 538 Forest Str	ODE) eet	Kearny	, N.J. 07032	<del></del>			
EMICAL NAME AND SYNONYMS			TRADE NAME AND		LEPO 60-	 Gʻ	<u> </u>
EMICAL FAMILY			FORMULA				<del></del>
Alkaline Electroclean							
44	SECT		DOUS INGREDIENTS*			<del>,</del>	
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HAZARDOUS MI	KTURES	OF OTHER L	IQUIDS, SOLIDS, OR GASES*			w/w	TLV (UNITS)
	<del> </del>		Soc	lium Hydro	xide	50%	2 mg/M ³
ж.	\$	ECTION III: P	HYSICAL DATA				
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POR PRESSURE (mm Hg.)		•	PERCENT VOLATILE BY VOLUME (%)			-	
APOR DENSITY (AIR = 1)			EVAPORATION RATE ( = 1)				
COMPLETE TO 24 oz	•/gal	•	·				}
PEARANCE AND ODOR' Free flowing po					اسولين استان يرس		
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USUAL FIRE AND EXPLOSION HAZARDS							

*PLEASE DO NOT USE GENERALIZATIONS, SUCH AS PETROLEUM HYDROCARBONS, ALCOHOL, KETONES.

USE SPECIFIC CHEMICAL NAMES, SUCH AS METHANOL, BENZENE, PERCHLOROETHYLENE.

DC 363(20 SEP 11)

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### FREDERICK GUMM CHEMICAL COMPANY, INC.

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HAZARD SHEET

CLEPO 60-G

CLEPO 60-G is an alkaline high-current density electrocleaner for steel. It consists of blended alkalies of a higher activity so that from a hazard consideration it should be considered similar to caustic soda. The use concentration is sufficiently high that the solutions also must be considered hazardous, although obviously not to the same degree as the dry powder. Since the solutions are used hot, heat burns are also possible. Avoid contact with skin or eyes.

FIRST AID - skin - flush thoroughly with water. Wash with boric acid or apply boric acid compresses if needed. May also be necessary to treat for heat burns.

- eyes - flush thoroughly with water. Wash with sterile boric acid. Get medical attention.

STORAGE - Keep dry. Do not store with strong acids.

CAUTION: - While being dissolved in water, CLEPO 60-G releases considerable heat. Additions of the powder to operating solutions should be made slowly with vigorous agitation, and the solution should be cooled to not more than 160°F to avoid localized boiling and the possibility of eruption due to the heat released.

The information presented herein, while not guaranteed, was prepared by technically knowledgeable personnel, and to the best of our knowledge is true and accurate. It is not intended to be all-inclusive, and the manner and conditions of use and handling may involve other or additional considerations.

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TRW-00571

0908-1937

### MATERIAL SAFETY DATA SHEET

711

SECTION 1 - IDENTIFICATION DATA

FREDERICK GUMM CHEMICAE COMPANY, INC.

538 Forest Street, Kearny, NJ 07032

CLEPO 131-W

Emergency Telephone Numbers:

Effective Date:

8:00 AM - 5:00 PM EST

(201) 991-4174

24 Hrs: (313) 644-5626

D.O.T. HAZARD CLASS - Chemical Solid NOS

CHEMICAL FAMILY - Alkaline cleaner

4-7-86

CHEMICAL NAME/SYNONYMS - CLEPO 131-W

FORMULA - Mixture

MSDS REVIEWED BY - Keith Frey, V.P. Quality & Regulatory Affairs

SECTION 2 - PHYSICAL DATA

BOILING POINT (Deg F) - NA

VAPOR PRESSURE (mm Hg) - NA VAPOR DENSITY (air=1) - NA

SOLUBILITY IN WATER - Complete to 32 oz/gal

SPECIFIC GRAVITY (H2O=1) - NA VOLATILE BY VOLUME - NA

EVAPORATION RATE (H20=1) - NA

APPEARANCE & ODOR:

white powder

SECTION 3 - FIRE AND EXPLOSION DATA

FLASH POINT - None

EXTINGUISHING MEDIA:

This product is not combustible.

SPECIAL FIRE FIGHTING PROCEDURES:

Protective clothing and self-contained breathing apparatus should be worn by firefighters in areas where product is stored. Water spray, foam, dry chemical, or carbon dioxide may be used in areas where product is stored.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None

NFPA HAZARD CLASSIFICATION:

Health (Blue) - 1

Flammability (Red) - 0

Reactivity (Yellow) - 1

DEGREE OF HAZARD

4=Extreme

3=High

2=Moderate

1=Slight

O=Insignficant

Material Safety Data Sheet for CLEPO 131-W

TRW-00572

_________ SECTION 4 - REACTIVITY DATA TABILITY: Stable

CONDITIONS TO AVOID: NA

INCOMPATIBILITY: Strong acids

HAZARDOUS DECOMPOSITION PRODUCTS:

None

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: NA

SECTION 5 - HAZARDOUS COMPONENTS

PAINTS, PRESERVATIVES, AND SOLVENTS:

NΔ

ALLOYS AND METALLIC COATINGS:

NA

HAZARDOUS COMPONENTS CAS NUMBER TLV PEL LD50 7722-88-5 5 NF 4000 Tetrasodium Pyrophosphate Tri Sodium Phosphate 10101-89-0 NF NF 7400 50.0

NF = None Found TLV = Ma/M3 -PEL = Mg/M3 - LD50 = oral, rat, Mg/Kg -

- # The indicated material, if any, is listed as a carginogen or potential carginogen by one or more of the following: National Toxicology Program, I.A.R.C. Monographs, OSHA.
- ** The indicated material, if any, does not have an estabished TLV, but does appear on one or more of the following states hazardous substance lists: Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Wisconsin, and is present in this product in amounts greater than 1%.
- & The indicated material, if any, is subject to the reporting requirements of SARA Title III, Section 313

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES ______

### SPILL & LEAK PROCEDURES:

Spilled material may be shoveled up, and stored in closed containers for possible normal use or proper disposal. Flush area with plenty of water.

### WASTE DISPOSAL METHODS:

Waste should not be discharged directly into sewers or streams. Neutralize to a locally acceptable pH, depending on usage and locality. May also require precipitation and filtration of heavy metals.

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### SECTION 7 - HEALTH HAZARD DATA

### ROUTES OF EXPOSURE

- INHALATION: Coughing, sneezing, or other symptoms of upper respiratory tract irritation may occur. Severe exposure may result in lung tissue damage.
- SKIN CONTACT: Dry product can be a skin irritant. May cause severe burns if not washed immediately.

SKIN ABSORPTION: N/A

- **EYE CONTACT:** Dry product can cause tissue destruction and permanent eye damage if not treated immediately.
- INGESTION: Dry product burns mucous membranes of the mouth, throat, esophagus, and stomach.

### EFFECTS OF OVEREXPOSURE

- ACUTE: Burns the mucous membranes of the respiratory tract, mouth, throat, esophagus, and stomach. Burns to eye and skin and possible permanent corneal damage.
- CHRONIC: The chronic local effect may consist of multiple areas of superficial destruction of the skin or of primary irritant dermatitis. Similarly, inhalation of spray or mists may result in varying degrees of irritation.

### EMERGENCY AND FIRST AID PROCEDURES

- EYES: IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes holding lids apart to ensure flushing of the entire surface. Washing eyes within one minute is essential to achieve maximum effectiveness. Seek medical attention immediately.
- SKIN: Wash with plenty of water for 15 minutes. Remove contaminated clothing and footwear, and wash clothing before reuse. Discard any piece of clothing or footwear that can not be decontaminated. Seek medical attention if symptoms are present.
- INHALATION: Get person out of contaminated area to fresh air.
- INGESTION: NEVER give anything by mouth to an unconscious person. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. If available, give several glasses of milk. If vomiting occurs spontaneously, keep airway clear. Seek medical attention immediately.

### SECTION 8 - SPECIAL HANDLING PROCEDURES

TSPIRATORY: Respiration protection is not required under normal use.

Use NIOSH/MSHA approved respirator where dust, mist, or spray may be

Use NIOSH/MSHA approved respirator where dust, mist, or spray may be generated above TLV limit.

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Material Safety Data Sheet for CLEPO 131-W

page: 3

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### SECTION 8 - SPECIAL HANDLING PROCEDURES continued

Use adequate local exhaust ventilation where dust, mist, or spray may be generated to maintain level below TLV limit.

GLOVES: Impervious gloves should be worn (ex. rubber or neoprene).

EYES: Chemical safety goggles and/or face shield.

Chemically resistant shoes and apron. Safety showers and eyewash facilities should be accessible. Wash contaminated clothing with soap and water, and dry before reuse.

### SECTION 9 - SPECIAL PRECAUTIONS

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### HANDLING AND STORAGE PRECAUTIONS::

Avoid contact with the skin and eyes. Wash thoroughly after handling. FOR POWDERS:

1. Store in a cool, dry area in a closed container.

### OTHER PRECAUTIONS:

Keep container tightly closed when not in use. Wash thoroughly after handling. Containers, even those that have been emptied, will retain: product residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Containers must not be used for any other purpose.

The information herein is based on technical data that is believed to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warrenties, expressed or implied, and assume no liability in connection with the use of this information.

Material Safety Data Sheet for CLEPO 131-W

### MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTIFICATION DATA PREDERICK GUMM CHEMICAL COMPANY, INC. Emergency Telephone Numbers: 538 Forest Street, Kearny, NJ 07032 8:00 AM - 5:00 PM EST (201) 991-4174 CLEPO 138-B 24 Urs: (313) 644-5626 3 - Chemical Solid NOS D.O.T. HAZARD CLASS Effective Date: CHEMICAL FAMILY - Alkaline cleaner 01-25-90 CHEMICAL NAME/SYNONYMS - CLEFO 138-B FORMULA - Mixture MSDS REVIEWED BY - Keith Frey, V.P. Quality & Regulatory Affairs SECTION 2 - PHYSICAL DATA BOILING POINT (Deg F)  $-N\Lambda$ VAPOR PRESSURE (mm Hg) - NA VAPOR DENSITY (air=1)
SOLUBLITY IN WATER - NA SOLUBILITY IN WATER - Complete to 32 oz/gal SPECIFIC GRAVITY (H20=1) - NA VOLATILE BY VOLUME + NA EVAPORATION RATE (H2O=1) - NA APPEARANCE & ODOR: Off white powder SECTION 3 - FIRE AND EXPLOSION DATA FLASH POINT - None EXTINGUISHING MEDIA: This product is not combustible. SPECIAL FIRE FIGHTING PROCEDURES: Protective clothing and self-contained breathing apparatus should be worn by firefighters in areas where product is stored. Water spray, foam, dry chemical, or carbon dioxide may be used in areas where product is stored. UNUSUAL FIRE AND EXPLOSION HAZARDS: None NEPA HAZARD CLASSIFICATION: DEGREE OF HAZARD _____ (Blue) Health 4=Extreme Flammability (Red) 3=High Reactivity (Yellow) - 1 2=Moderate 1=Slight 0=insignficant 0908-1942

Material Safety Data Sheet for CLEPO 138-B TRW-00576

SECTION 4 - REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: NA

INCOMPATIBILITY:

Strong acids

HAZARDOUS DECOMPOSITION PRODUCTS:

None

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: NA

SECTION 5 - HAZARDOUS COMPONENTS

PAINTS, PRESERVATIVES, AND SOLVENTS:

M: A

ALLOYS AND METALLIC COATINGS:

NA

HAZARDOUS COMPONENTS	CAS NUMBER	TLV	PEL.	1.050	X
Sodium Silicate	6834-92-0	C-2	2	800	50.0
Tetrasodium Pyrophosphate	7722-88-5	5	NE	1000	6.50
Tri Sodium Phosphate	10101-89-0	NE	NE	7400	8.00
Stoddard Solvent	8052-41-3	525	2950	NE	0.50

Thy = Mg/M3 - PKh = Mg/M3 - hD50 = oral, rat, <math>Mg/Kg - NF = None Found

- # The indicated material, if any, is listed as a carginogen or potential carginogen by one or more of the following: National Toxicology Program, I.A.R.C. Monographs, OSHA.
- ** The indicated material, if any, does not have an established TLV, but does appear on one or more of the following states hazardous substance lists: Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Wisconsin, and is present in this product in amounts greater than 1%.
- & The indicated material, if any, is subject to the reporting requirements of SARA Title III, Section 313

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

### SPHIL & LEAK PROCEDURES:

Spilled material may be shoveled up, and stored in closed containers for possible normal use or proper disposal. Flush area with plenty of water.

TRW-00577

SECTION 6 - SPILL, LEAK AND DISPOSAL PROCEDURES continued

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES continued

### WASTE DISPOSAL METHODS:

Waste should not be discharged directly into sewers or streams. Neutralize to a locally acceptable pH, depending on usage and locality. May also require precipitation and filtration of heavy metals.

### SECTION 7 - HEALTH HAZARD DATA

ROUTES OF EXPOSURE

INHALATION: Coughing, sneezing, or other symptoms of upper respiratory tract irritation may occur. Severe exposure may result in lung tissue damage.

SKIN CONTACT: Dry product can be a skin irritant. May cause severe burns if not washed immediately.

SKIN ABSORPTION: N/A

EYE CONTACT: Dry product can cause tissue destruction and permanent eye damage if not treated immediately.

INGESTION: Dry product burns mucous membranes of the mouth, throat, esophagus, and stomach.

### EFFECTS OF OVEREXPOSURE

ACUTE: Burns the mucous membranes of the respiratory tract, mouth, throat, esophagus, and stomach. Burns to eye and skin and possible permanent corneal damage.

CHRONIC: The chronic local effect may consist of multiple areas of superficial destruction of the skin or of primary irritant dermatitis. Similarly, inhalation of spray or mists may result in varying degrees of irritation.

### EMERGENCY AND FIRST ALD PROCEDURES

EYES: IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes holding lids apart to ensure flushing of the entire surface. Washing eyes within one minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

SKIN: Wash with plenty of water for 15 minutes. Remove contaminated clothing and footwear, and wash clothing before reuse. Discard any piece of clothing or footwear that can not be decontaminated. Seek medical attention if symptoms are present.

INHALATION: Get person out of contaminated area to fresh air.

INGESTION: NEVER give anything by mouth to an unconscious person. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. If available, give several glasses of milk. If vomiting occurs spontaneously, keep airway clear. Seek medical attention immediately.

TRW-00578

Material Safety Data Sheet for CLEPO 138-B

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VMNTILATION: Use adequate local exhaust ventilation where dust, mist, or garay may be generated to maintain level below TLV limit.

GLOVES: impervious gloves should be worn (ex. rubber or neoprene).

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OTHIMM: Chemically resistant shoes and apron. Safety showers and eyewash and facilities thous him gwith soap and tacilities should be accessible. Wash contaminated clothing with soap and tates, and dry before reuse.

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HANDLING AND STORAGE PRECAUTIONS:: Avoid contact with the skin and eyes. Wash thoroughly after handling. .

FOR POWDERS: 1. Store in a cool, dry area in a closed container.

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Keep container tightly closed when not in use. Wash thoroughly after handling. Containers, even those that have been emptied, will retain product residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Containers must not be used for any other purpose.

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### MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTIFICATION DATA PREDERICK GUMM CHEMICAL COMPANY, INC. Emergency Telephone Numbers: 538 Forest Street, Kearny, NJ 07032 8:00 AM - 5:00 FM EST (201) 991-4171 CLEPO 140-DX 24 Hrs: (313) 644-5626 D.O.T. HAZARD CLASS - CHEMICAL N.O.I. Effective Date: CHEMICAL FAMILY - Mild oxidizing acid 01-25-90 CHEMICAL NAME/SYNONYMS - CLEPO 110-DX - Mixture MSDS REVIEWED BY - Keith Frey, V.P. Quality & Regulatory Affairs SECTION 2 - PHYSICAL DATA BOILING POINT (Deg F) - NA VAPOR PRESSURE (mm Hg) -NAVAPOR DENSITY (air=1) NA SOLUBILITY IN WATER - Complete to 32 oz/gal SPECIFIC GRAVITY (H20=1) - NA VOLATILE BY VOLUME EVAPORATION RATE (H2O=1) - NA APPEARANCE & ODOR: Off-white granules SECTION 3 - FIRE AND EXPLOSION DATA FLASH POINT - None EXTINGUISHING MEDIA: This product is not combustible. SPECIAL FIRE FIGHTING PROCEDURES: Protective clothing and self-contained breathing apparatus should be worn by firefighters in areas where product is stored. Water spray, foam, dry chemical, or carbon dioxide may be used in areas where product is stored. UNUSUAL FIRE AND EXPLOSION HAZARDS: None

### NEPA HAZARD CLASSIFICATION:

Health (Blue) Flammability (Red) Reactivity (Yellow) - 1

### DEGREE OF HAZARD ______

4=Extreme 3=High 2=Moderate 1=Slight 0=thsignficant

0908-1946

TRW-00580

Material Safety Data Sheet for CLEPO 140-DX

SECTION 4 - REACTIVITY DATA STABILITY: Stable CONDITIONS TO AVOID: NA INCOMPATIBILITY: Strong alkali HAZARDOUS DECOMPOSITION PRODUCTS: None expected HAZARDOUS POLYMERIZATION: Will not occur CONDITIONS TO AVOID: NA SECTION 5 - HAZARDOUS COMPONENTS PAINTS, PRESERVATIVES, AND SOLVENTS: ALLOYS AND METALLIC COATINGS: NA HAZARDOUS COMPONENTS CAS NUMBER T1.V PEL. 1.050 7 NONE PEL = Mg/M3 - LD50 = oral, rat, Mg/Kg -Thy = Mg/M3 -NF = None Found # - The indicated material, if any, is listed as a carginogen or potential carginogen by one or more of the following: National Toxicology Program,

- I.A.R.C. Monographs, OSHA.
- ** The indicated material, if any, does not have an established TLV, but does appear on one or more of the following states hazardous substance lists: Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Wisconsin, and is present in this product in amounts greater than 1%.
- & The indicated material, if any, is subject to the reporting requirements of SARA Title III, Section 313

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

### SPILL & LEAK PROCEDURES:

Spilled material may be shoveled up, and stored in closed containers for possible normal use or proper disposal. Flush area with plenty of water.

### WASTE DISPOSAL METHODS:

Waste should not be discharged directly into sewers or streams. Neutralize to a locally acceptable pH, depending on usage and locality. May also require precipitation and filtration of heavy metals.

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### MANUSCHEE OF EXPOSURE

INHALATION: Coughing, sneezing, or other symptoms of upper respiratory tract irritation may occur. Severe exposure may result in lung tissue tamage.

SKIN CONTACT: Ony product can be a skin irritant.

SKIN VUSOBBLION: NV

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MAR CONTACT: Dry product can cause tissue destruction and permanent eye damage if not treated immediately.

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### REFECTS OF OVEREXPOSIBLE

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MYMS: IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes holding lids apart to ensure flushing of the entire surface. Washing eyes within one minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

SKIN: Wash with plenty of water for 15 minutes. Remove contaminated clothing and footwear, and wash clothing before rense. Discard any piece of clothing or footwear that can not be decontaminated. Seek medical action if symptoms are present.

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INGESTION: MEVER give anything by month to an unconscious person. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. If vomiting occurs spontaneously, keep airway clear. Seek medical attention immediately.

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ventination where adequate local exhaust ventilation where dust, mist, or generated.

### TRW-00582

SECTION 8 - SPECIAL HANDLING PROCEDURES continued ______

GLOVES: Impervious gloves should be worn (ex. rubber or neoprene).

gyms: Chemical safety goggles and/or face shield.

OTHER: Chemically resistant shoes and apron. Safety showers and eyewash facilities should be accessible. Wash contaminated clothing with soap and

water, and dry before reuse.

SECTION 9 - SPECIAL PRECAUTIONS

### HANDLING AND STORAGE PRECAUTIONS::

Avoid contact with skin and eyes. Wash thoroughly after handling. in a cool, dry area in a closed container.

### OTHER PRECAUTIONS:

Keep container tightly closed when not in use. Wash thoroughly after handling. Containers, even those that have been emptied, will retain product residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Containers must not be used for any other purpose.

TRW-00583

The information herein is based on technical data that is believed to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warrenties, expressed or implied, and assume no liability in connection with the use of this information.

> ========= page: 4

### MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTIFICATION DATA PREDERICK GUMM CHEMICAL COMPANY, INC. Emergency Telephone Numbers: 8:00 AM - 5:00 PM EST 538 Forest Street, Kearny, NJ 07032 (201) 991-1171CLEPO 157-CF 24 Hrs: (313) 644-5626 ( Effective Date: D.O.T. HAZARD CLASS - Chemical NOS CHEMICAL FAMILY 01 - 25 - 90- Burnishing compound CHEMICAL NAME/SYNONYMS - CLEPO 157-CF FORMULA - Mixture MSDS REVIEWED BY - Keith Frey, V.P. Quality & Regulatory Affairs SECTION 2 - PHYSICAL DATA BOILING POINT (Deg F) - NA VAPOR PRESSURE (mm Hg) VAPOR DENSITY (air=1) - NA SOLUBILITY IN WATER - Complete to 16 oz/gal SPECIFIC GRAVITY (H20=1) - NA VOLATILE BY VOLUME EVAPORATION RATE (H2O=1) - NA APPEARANCE & ODOR: Off white powder SECTION 3 - FIRE AND EXPLOSION DATA FLASH POINT - None EXTINGUISHING MEDIA: NΛ SPECIAL FIRE FIGHTING PROCEDURES: Protective clothing and self-contained breathing apparatus should be worn by firefighters in areas where product is stored. Water spray, foam, dry chemical, or carbon dioxide may be used in areas where product is stored. UNUSUAL FIRE AND EXPLOSION HAZARDS: None NEPA HAZARD CLASSIFICATION: DEGREE OF HAZARD ______ (Blue) - 1 Health 4=Extreme Flammability (Red) - 0 3=High Reactivity (Yellow) - 1 2=Moderate 1=Slight O=Insignficant

Material Safety Data Sheet for CLEPO 157-CF

0908-1950 page: 1

TRW-00584

SECTION 4 - REACTIVITY DATA STABILITY: Stable CONDITIONS TO AVOID: NA INCOMPATIBILITY: Strong acids HAZARDOUS DECOMPOSITION PRODUCTS:  $N \otimes n \simeq$ HAZARDOUS POLYMERIZATION: Will not occur CONDITIONS TO AVOID: NA SECTION 5 - HAZARDOUS COMPONENTS PAINTS, PRESERVATIVES, AND SOLVENTS: ALLOYS AND METALLIC COATINGS: NA HAZARDOUS COMPONENTS CAS NUMBER TLV 1.050 PEL. 9005-84-9 10 NE NE 10.4 25155-30-0 NE 650 0.10 Sodium Dodecylbenzene Sulfonate NE TLV = Mg/M3 -PEL = Mg/M3- LD50 = oral, rat, Mg/Kg - NF = None Found

- # The indicated material, if any, is listed as a carginogen or potential carginogen by one or more of the following: National Toxicology Program, I.A.R.C. Monographs, OSHA.
- ** The indicated material, if any, does not have an established TLV, but does appear on one or more of the following states hazardous substance lists: Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Wisconsin, and is present in this product in amounts greater than 1%.
- & The indicated material, if any, is subject to the reporting requirements of SARA Title III, Section 313

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

### SPILL & LEAK PROCEDURES:

Spilled material may be shoveled up, and stored in closed containers for possible normal use or proper disposal. Flush area with plenty of water.

### WASTE DISPOSAL METHODS:

Waste should not be discharged directly into sewers or streams. Neutralize to a locally acceptable pH, depending on usage and locality. May also require precipitation and filtration of heavy metals.

TRW-00585

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### SECTION 7 - HEALTH HAZARD DATA

### ROUTES OF EXPOSURE

INHALATION: Coughing, sneezing, or other symptoms of upper respiratory tract irritation may occur. Severe exposure may result in lung tissue damage.

SKIN CONTACT: Dry product can be a skin irritant.

SKIN ABSORPTION: NA

EYM CONTACT: Dry product can cause tissue destruction and permanent eye damage if not treated immediately.

INGESTION: Dry product irritates mucous membranes of the mouth, throat, esophagus, and stomach.

### EFFECTS OF OVEREXPOSURE

ACUTE: Irritates the mucous membranes of the respiratory tract, mouth, throat, esophagus, and stomach. Can also cause permanent eye injury.

CHRONIC: Data not available.

### EMERGENCY AND FIRST ALD PROCEDURES

EYES: IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes holding lids apart to ensure flushing of the entire surface. Washing eyes within one minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

SKIN: Wash with plenty of water for 15 minutes. Remove contaminated clothing and footwear, and wash clothing before reuse. Discard any piece of clothing or footwear that can not be decontaminated. Seek medical attention if symptoms are present.

INHALATION: Get person out of contaminated area to fresh air.

INGESTION: NEVER give anything by mouth to an unconscious person. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. If vomiting occurs spontaneously, keep airway clear. Seek medical attention immediately.

### SECTION 8 - SPECIAL HANDLING PROCEDURES

RESPIRATORY: Respiration protection is not required under normal use. Use NIOSH/MSHA approved respirator where dust, mist, or spray may be generated.

VENTILATION: Use adequate local exhaust ventilation where dust, mist, or spray may be generated.

TRW-00586

Material Safety Data Sheet for CLEPO 157-CF

## SECTION 8 - SPECIAL HANDLING PROCEDURES continued 11 11 11 11 14 11 11 11

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rubber or neoprene). impervious gloves should be worn (ex.

safety goggles and/or face shield Chemical EYES:

eyewash 1408 1408 1408 11 1 M showers and clothing and apron. Safety Wash contaminated OTHER: Chemically resistant shoes and facilities should be accessible. Was water, and dry before reuse.

## SECTION 9 - SPECIAL PRECAUTIONS

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after handling Wash thoroughly HANDLING AND STORAGE PRECAUTIONS::
Avoid contact with skin and eyes. Wash the in a cool, dry area in a closed container.

## OTHER PRECAUTIONS:

Always obey hazard warnings and handle empty oll. Containers must not be used for any Keep container tightly closed when not in use. Wash thoroughly after handling. Containers, even those that have been emptied, will retain product residue and vapors. Alwa containers as if they were full. other purpose.

### TRW-00587

technical data that is believed to be The information herein is based on technical data that is believed to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warrenties, expressed or implied, and assume no liability in connection with the use of this information.

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## U.S. DEPARTMENT OF LABOR Occupational Safety & Health Administration MATERIAL SAFETY BATA SHEET

		SEC1	TION I			
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The data in this Material Safety Data Sheet relates only to the specific material designated flerein and does not relate to use in combination with any other material or in any process.

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0908-1955

### MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTIFICATION DATA FREDERICK GUMM CHEMICAL COMPANY, INC. Emergency Telephone Numbers: 538 Forest Street, Kearny, NJ 07032 8:00 AM - 5:00 PM HST (201) 991-4174 CURPO 198-JA* ... 24 Hrs: (313) 644-5626 D.O.T. HAZARD CLASS - Corrosive Solid NOS Effective Date: CHEMICAL FAMILY - Acid salt 01-26-90 CHEMICAL NAME/SYNONYMS - CLEPO 198-JA - Mixture FORMULA MSDS REVIEWED BY - Keith Frey, V.P. Quality & Regulatory Affairs SECTION 2 - PHYSICAL DATA BOILING POINT (Deg F) - NA VAPOR PRESSURE (mm Hg) - NA VAPOR DENSITY (air=1) - NA SOLUBILITY IN WATER - Complete to 32 oz/gal SPECIFIC GRAVITY (H20=1) - NA VOLATTLE BY VOLUME - NA EVAPORATION RATE (H2O=1) - NA APPEARANCE & ODOR: Off white granuals SECTION 3 - FIRE AND EXPLOSION DATA FLASH POINT - None EXTINGUISHING MEDIA: This product is not combustible. SPECIAL FIRE FIGHTING PROCEDURES: Protective clothing and self-contained breathing apparatus should be worn by firefighters in areas where product is stored. Water spray, foam, dry chemical, or carbon dioxide may be used in areas where product is stored. UNUSUAL FIRE AND EXPLOSION HAZARDS: At temp >570 F, hazardous fumes of sulfur dioxide & trioxide, HF & ammonia are evolved. They must be eliminated by forced drafted ventilation. NEPA HAZARD CLASSIFICATION: DEGREE OF HAZARD

> 4=Extreme 3=High 2=Moderate 1=Slight 0=Insignficant

> > TRW-00590

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1908-1930 page: 1

Health (Blue) - 3

Flammability (Red) - 0

Reactivity (Yellow) - 1

SECTION 4 - REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: NA

INCOMPATIBILITY:

Should not be mixed with strong alkalies.

### HAZARDOUS DECOMPOSITION PRODUCTS:

None expected, except under extreme heat as mentioned above under UNUSUAL. FIRE AND EXPLOSION HAZARDS.

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: NA

SECTION 5 - HAZARDOUS COMPONENTS 

PAINTS, PRESERVATIVES, AND SOLVENTS:

ALLOYS AND METALLIC COATINGS:

N/A

HAZARDOUS COMPONENTS	CAS NUMBER	TLV	PEL.	1.050	×
Ammonium Bifluoride	1341-49-7	2.5	2.5	350	5.00
Proprietary (NJTSR#-010625-5034-P)	******	NIC	NF	NF	2.00
#-1,3-Diethylthiourea	105-55-5	NE	NK	316	0.10

TLV = Mg/M3 - PEL = Mg/M3 - LD50 = oral, rat, Mg/Kg - NF = None Found

- # The indicated material, if any, is listed as a carginogen or potential carginogen by one or more of the following: National Toxicology Program, I.A.R.C. Monographs, OSHA.
- ** The indicated material, if any, does not have an established TLV, but does appear on one or more of the following states hazardous substance lists: Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Wisconsin, and is present in this product in amounts greater than 1%.
- & The indicated material, if any, is subject to the reporting requirements of SARA Title III, Section 313

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SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES 

### SPILL & LEAK PROCEDURES:

Spilled material may be shoveled up, and stored in closed containers for possible normal use or proper disposal. Flush area with plenty of water. Mild alkali or lime solutions may be used to neutralize final traces immediately after flushing.

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-========== Material Safety Data Sheet for CLEPO 198-JA

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES continued

### WASTE DISPOSAL METHODS:

Acid waste solutions should not be discharged into sewers or streams. Acid should first be neutralized with dilute alkali or lime (to precipitate fluoride) solutions to a locally acceptable pH, and then well diluted with water. Depending on usage and locality, may also require precipitation and filtration of heavy metals. Obey all Federal, State, and Local laws.

SECTION 7 - HEALTH HAZARD DATA

36C170W / - HEARTH HAZARD DATA

### ROUTES OF EXPOSURE

INHALATION: Breathing dust, mist, spray, or fumes may cause irritation to the respiratory system. Gross over exposure may result in further toxic effects, including difficult breathing and coughing.

SKIN CONTACT: This product is destructive to tissues contacted and may produce severe burns.

SKIN ABSORPTION: See SKIN CONTACT above. Also, high concentrations of fluoride in the urine have been reported following skin contact.

EYE CONTACT: This product is destructive to eye tissues on contact. May cause severe burns that result in damage to the eyes and even blindness.

INGESTION: This product, if swallowed, will cause severe burns of the mouth and stomach, and may cause complete tissue perforation. Other symptoms include severe shock, convulsions, toxic nephritis, cardiac disturbances, and poisoning due to hypocalcemia (precipitation of body calcium).

### EFFECTS OF OVEREXPOSURE

ACUTE: Corrosive to all body tissues with which it comes in contact.

Possible fluoride poisoning if swallowed.

CHRONIC: Data not available.

### EMERGENCY AND FIRST AID PROCEDURES

EYES: IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within 1 minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

SKIN: Immediately wash contaminated areas with plenty of water for 15 minutes. Remove contaminated clothing and footwear, and wash clothing before reuse. Discard any clothing that can not be decontaminated. Seek medical attention immediately.

INHALATION: Get person out of contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.

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## - HEALTH HAZARD DATA continued SECTION 7 - HE

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no an unconscious person. DO NOT milk, or other calcium-containin spontaneousl ARSTION: NEVER give anything by mouth to an unconscious persished VOMITING. Give large quantities of milk, or other calc (ev. milk of magnesia, 1% lime & water). If vomiting occurs keep airway clear. Seek medical attention immediately.

# SECTION 8 - SPECIAL HANDLING PROCEDURES

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- RESPIRATORY: Respiration protection is not required under normal use. Use NIOSH/MSHA approved respirator where dust, mist, or spray may be generated above TLV limit.
- 11. 11. Use adequate local exhaust ventilation where dust, spray may be generated, to maintain level below TLV limit. VENTILIATION:
- Impervious gloves should be worn (ex. rubber or neoprene GLOVES:
- safety goggles and/or face shield. Chemica] EYES:
- eyewash should be and stant shoes and apron. Safety showers accessible. All contaminated clothing water, and dried before reuse. KR: Chemically resistant shoes and apron. facilities should be accessible. All contains washed with soap and OTHER:

## - SPECIAL PRECAUTIONS SECTION 9

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## HANDLING AND STORAGE PRECAUTIONS::

Avoid contact with strong alkali. Will etch glass over prolonged period of time. Powder dissolves in water to form an acidic solution. Store in a cool dry area, in a closed container. Avoid contact with skin and eyes

## OTHER PRECAUTIONS:

closed when not in use. Wash thoroughly after even those that have been emptied, will retain oors. Always obey hazard warnings and handle empty Containers must not be used for any Keep container tightly closed when not in use. full. product residue and vapors. Containers,

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0908-1959

### 8.S. DEPARTMENT OF LABOR Occupational Safety & Health Administration MATERIAL SAFETY DATA SHEFT

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FREDERICK GUMM CHEMICAL COMPANY Torrest Strant, Kearny, WJ 07038

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# SECTION 3 - FIRE AND EXPLOSION DATA

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## EXTINGUISHING MEDIA:

product is not combustible

## FIRE FIGHTING PROCEDURES:

Protective clothing and self-contained breathing apparatus should be worn by firefighters in areas where product is stored. Water spray, foam, dry chemical, or carbon dioxide may be used in areas where product is stored.

ONUSUAL FIRE evolved. AND EXPLOSION HAZARDS:  $V_{\rm t}$  hazardous fumes of sulfur dioxide & trioxide, HF & . They must be eliminated by forced drafted ventilation ammoni

### VALIN HAZARD CLASSIFICATION:

### DEGREE OF HAZARD

	Flammability	
(Yellow)	(Red)	(Blue)
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3=High 2=Moderate 1=Slight Admixtreme

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### - REACTIVITY DATA SECTION 4

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INCOMPATIBLEITY

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HAZARDOUS DECOMPOSITION PRODUCTS

under above mentioned α, σ heat except under extreme None expected, except under FIRE AND EXPLOSION HAZARDS.

occur POLYMERIZATION: Will not ONS TO AVOID: NA CONDITTIONS TO AVOID: HAZARDOUS

# SECTION 5 - HAXARDOUS COMPONENTS

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SOLVENTS: PAINTS, PRESERVATIVES, AND

AND METALLIC COATTINGS: ALLOYS

NUMBER (NJTSR#-010625-5034-P) Ammonium Bifluoride HAZARDOUS COMPONENTS Proprietary

-1,3-Diethylthiourea

*

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= None Found Mg/Kg oral, rat, H 1.050 Mg/M3H Mg/M3 > 'I ...

potential Program, c as a carginogen or National Toxicology , if any, is listed of the following: The indicated material, 1.A.R.C. Monographs, OSHA. or more carginogen by one

60 44 60 but • /--<u>}</u> The indicated material, if any, does not have an estabished TLV, bappear on one or more of the following states hazardous substance 302 Wisconsin, and is present in this product in amounts greater than West Virginia, Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virgi does and

any, is subject to the reporting requirement. ij of SARA Title III, Section indicated material,

# SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

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## SPILL & LEAK PROCEDURES:

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for Water and stored in closed containers ed material may be shoveled up, and stored in closed containers ble normal use or proper disposal. Flush area with plenty of walkali or lime solutions may be used to neutralize final traces liately after flushing. Spilled material may be possible normal immediately PLIN

# SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES continued

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## METHODS:

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Acid waste solutions should not be discharged into sewers or streams. Acid waste solutions should not be dilute alkall or lime (to precipitate fluoride) solutions to a locally acceptable pH, and then well diluted with water. Depending on usage and locality, may also require precipitation and filtration of heavy metals. Obey all rederal, State, and Local laws.

# SECTION 7 - HEALTH HAZARD DATA

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## ROUTES OF EXPOSURE

- may cause irritation the result in further toxi irritation t mist, spray, or fumes may ALATION: Breathing dust, mist, spray, or fumes may the respiratory system. Gross over exposure may resieffects, including difficult breathing and coughing.
- 7 contact SKIN CONTACT: This product is destructive to tissues produce severe burns.
- ۹. N ABSORPTION: See SKIN CONTACT above. Also, high concentrations fluoride in the urine have been reported following skin contact. SKIN ABSORPTION:
- CT: This product is destructive to eye tissues on contact. May severe burns that result in damage to the eyes and even blindness EYE CONTACT: 0.600
- mouth and stomach, and may cause complete tissue perforation. Other symptoms include severe shock, convulsions, toxic nephritis, cardiac disturbances, and poisoning due to hypocalcemia (precipitation of body calcium). This product, if swallowed, will cause severe burns of the INCLUSION:

## EFFECTS OF OVEREXPOSURE

- all body tissues with which it comes in contact oisoning if swallowed. Possible fluoride poisoning Corrosive to ACUTE:
- Data not available. CHRONIC:

# EMERGENCY AND FIRST AID PROCEDURES

- minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within 1 minute is essential to achieve maximum effectivenes Seek medical attention immediately. at least 1 amounts of water for IMMEDIATELY flush eyes with large
- and wash clothing areas with plenty of water for 15 N: Immediately wash contaminated areas with plenty of water for 1 minutes. Remove contaminated clothing and footwear, and wash cloth before reuse. Discard any clothing that can not be decontaminated. medical attention immediately. SKIN
- ALATTION: Get person out of contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.

### SECTION 7 - HEALTH HAZARD DATA continued

INGESTION: NEVER give anything by mouth to an unconscious person. DO NOT (ADECL NOMITING. Give large quantities of wilk, or other calcium-containing (ex. wilk of magnesia, 1% lime & water). If vomiting occurs spontaneously, keep sirway oleac. Seek medical attention immediately.

### SECTION 8 - SPECIAL HANDLING PROCEDURES

RESPIRATORY: Respiration protection is not required under normal use. tse NIOSH/MSHA approved respirator where dust, mist, or spray may be generated above TLV limit.

VENTILATION: Use adequate local exhaust ventilation where dust, mist, or spray may be generated, to maintain level below TLV limit.

impervious gloves should be worn (ex. rubber or neoprene). GLOVES:

Chemical safety goggles and/or face shield. EYES:

OTHER: Chemically resistant shoes and apron. Safety showers and eyewash facilities should be accessible. All contaminated clothing should be washed with soap and water, and dried before reuse.

### SECTION 9 - SPECIAL PRECAUTIONS

### HANDLING AND STORAGE PRECAUTIONS::

Avoid contact with strong alkali. Will etch glass over prolonged period of time. Powder dissolves in water to form an acidic solution. Store in a cool dry area, in a closed container. Avoid contact with skin and eyes.

### OTHER PRECAUTIONS:

Keep container tightly closed when not in use. Wash thoroughly after handling. Containers, even those that have been emptied, will retain product residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Containers must not be used for any other purpose.

TRW-00599

The information herein is based on technical data that is believed to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warrenties, expressed or implied, and assume no liability in connection with the use of this information.

-----page: 4 Material Safety Data Sheet for CLEPO 198-JA

### 8.S. DEPARTMENT OF LABOR Occupational Safety & Health Administrati MATERIAL SAFETY DATA SHEET

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### Occupational Safety & Health Administration MATERIAL SAFETY DATA SHEET

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The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

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Over 1200 metal finishing chemicals for surface preparation, plating, aluminum finishing, post finishing, and mass finishing. CLEPO 216-8

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Fax # 617 - 494 - 5536	Fax #

CLEPO 216-B is a very mildly alkeline cinsing aid and tarnish preventative for copper and its alloys. It is especially effective on brass. CLEPO 216-B is provided in a convenient liquid form.

CLEPO 216~B is used at condentrations of 1% by volume with water. Immerator times of 60 seconds at 140 deg P (60 deg C) or 15-30 seconds at 160-180 deg F (70-80 deg C) have produced excellent results. Shortening the rinse time may not give complete pro-tection. Longer immersion times are not harmful. Equipment may be of plain steel.

Parts entering the CLEPO 216-B solution should have a neutral or faintly alkaline surface. Therefore, if parts have been bright dipped, they should be neutralized before final rinsing.

CLEPO 216-B solution may be operated and controlled as a maintained bath. However, the build-up of contaminants from drag-in and losses due to evaporation will result in decreasing effectiveness. Best results are obtained by discarding the final rings and making it new at intervals determined by production requirements.

In hard water areas, continued operation of CLEPO 216-B solution at high temperatures may result in the formation of white spots due to the accumulation of hard water salts. If this problem arises, use of low temperature drying and CLEPO 216-F will generally eliminate the problem.

### CAUTION

CLEPO 216-B concentrate contains a small percentage of caustic potash. Avoid contact of concentrate with skin or eyes. In the event of contact, flush thoroughly with water. For eyes flush thoroughly with water and get medical attention.

### WASTE DISPOSAL INFORMATION

CLEPO 216-B contains no chromates, cyanides, fluorides, phosphates, silicates or phenolic compounds. All surface active agents ere biodegradable. Total alkalinity of the concentrate to a phenolphthalein endpoint #s 2.5% w/w as \$20.

The information presented herein was prepared by technically knowledgeable personnel and to the best of our knowledge is true and accurate. It is not intended to be all-inclusive, and the manner and conditions of use and handling may involve othe roz additional considerations.

Flerick Gu nm Chemical Company, Inc. JAP FORE " STREET, REAPHY, NEW JERSEY 07032

### U.S. DEPARTMENT OF LABOR WORKPLACE STANDARDS ADMINISTRATION BUREAU OF LABOR STANDARDS

MAY 1971

MDC CONTPOL NO.

FORM NO COMA - 20 MODIF ED

MATERIAL CAPETY DATA SHEET

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C3	volohe <b>xano</b> ne						10%	50 ppm
Μe	thylene Chlorid	e					70%	500 ppm
से	ormic Acid						10%	5 ppm
			ECTION III: P		TA GRAVITY (H ₂ 0 = 1)		<del>,</del>	~~~~
#CILING POINT (OF)	Approx. 110°	F			VOLATILE	Ap	prox. 1.2	
APOR FIRESURE (min Hg.)			l∿4	EY VOLUM	E (6,1	-	96%	
CHOR! NUTY (AIR = 1)	Approx. 3.3			1	ION RATE Ver	y low-w i	ax seal ncluded	
C.OSI, TY IN WATER	Dispersible					· · · · · · · · · · · · · · · · · · ·		
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PLIASE DO NOT USE GENERALIZATIONS SUCH AS PETROLEUM HYDROCARBONS, ALCOHOL, KETONES US SPECIFIC CHEMICAL NAMES, SU CONTHANOL, BENZENE, PERCHLOROETHYLENE,

to oven flame.

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doctor. F	or inhalation,	nel to	frest	n air.	•
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				ON VI: REACTIVITY DATA	
	UNSTABLE	CON	DITION.	S TO A VOID	
STABILE Y	STABLE	х			
COMPATIBILITY MAT	ERIALS TO AVOID	Avoid	conta	ct with strong oxidizers or open fl	ame.
AZARDO IS DECOMPOS	TION PRODUCTS	Contact	t wit	h open flame may generate phosgene.	
	MAY OC	CL'R	$\neg$	CONDITIONS TO AVOID	
ALARDOUS OLYMERIZATION		OT OCCUR	-		
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TEPS TO BE TAKEN IN	616 144 76 114 16 16			I: SPILL OR LEAK PROCEDURES	
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IEFS IC BE TAKEN IN	If possible				, sweep up and
	If possible, discard.	, Clush t	to dr	ain. Alternate - absorb on sawiust	
	If possible, discard.	, flush t	to dra	ain. Alternate - absorb on sawiust in if local restrictions permit. A	
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ACTE DE POSAL METH  ENTELATION  RETECT VE GLOVES Fultber, Ne	If possible discard.  OB Neutralize a professional tion specify type.  LOCAL EXHAUST MECHANICAL (GEN COPPENS OF CARVE) Apron and 1	SECTION  SECTION  A SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  SECTION  S	o dra:	ain. Alternate - absorb on sawiust  in if local restrictions permit. A  sal service.  PECIAL PROTECTION INFORMATION  SPECIAL  OTHER  th polyothylene Goggles or Fa  ng on conditions  IX. SPECIAL PRECAUTIONS	ternate - use
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Samples Las

Effective Date:

### MATERIAL SAFETY DATA SHEET YING

SECTION 1 - IDENTIFICATION DATA

FREDERICK GUMM CAL COMPANY, INC. SIB Titust Street, Kearny, 4J - 07032:

Emergency Telephone Numbers:

(201) 99: 7:74

CLEPO 425-A

24 Hrs: (313) 644-5626

 $(x_1, x_2, \dots, x_n) = (x_n, x_n, \dots, x_n)$ 

n D.T. KNZARD DLASS - Cleaning Dompound N.D.B. DrEMICAL FAMILY - Liquid Dleaner

O DATON TO THE MOYNONYMS - DLEPD 425-A managara a sa - **Y**1, 1, 1, 2

Maith Fray, V.T. Quality & Regulation, Assairc

### SECTION 2 - PHYSICAL DATA

BOILING POINT (Deg F) - Over 212 degrees 5

- *** ಆರ್ಥದ ಇಳವರುಬರುವ (bum Hg) -

VAPOR DENSITY (air=1) - VA

THE CONTRACTOR OF STANDING - Complete

SPECIFIC GRAVITY (H20=1) - 1.01 VOLATILE DY VOLUME - 93% EVAPORATION RATE (H2O≈1) - 1

PREARANCE & CDCF: rellowish liquid

### SECTION 3 - FIRE AND EXPLOSION DATA

FLASH POINT - None

### EXTINGUISHING MEDIA:

This product is not combustible. SEE SPECIAL FIRE FIGHTING PROCEDURES.

### SPECIAL FIRE FIGHTING PROCEDURES:

Protective clothing and self-contained breathing apparatus should be worn by firefighters in areas where product is stored. Water spray, foam, dry Themloal, or ca**rbon dioxide may be used** in areas where product is stored.

### UNUSUAL FIRE AND EXPLOSION HAZARDS:

Mode

### NFPA HAZARD CLASSIFICATION:

(Blue) Health Flammability (Red) - 0 Reactivity (Yellow) - 0 DEGREE OF HAZARD

4=Extrame 3=High 2=Moderate 1=Slight O=Insignficant

0908-1973

TRW-00607

:=========: page: 1

Material Safety Data Sheet for CLEPO 425-A

______

### SECTION 4 - REACTIVITY DATA

TABILITY: Otable

PRINCIPLE TO AVOID: NA

INCOMPATIBILITY:

Di log disils, strang exi<mark>diz</mark>ans.

HAZARDOUS DECOMPOSITION PRODUCTS:

HAZARDOUS POLYMERIZATION: Will not occur 

SECTION 5 - HAZARDOUS COMPONENTS

PAINTS, PRESERVATIVES, AND SOLVENTS:

ALLOYS AND METALLIC COATINGS:

HAZARDOUS COMPONENTS %-Diethanolamine Ethyl Alcohol

CAS NUMBER 111-42-2-9

TLV PEL LD50 NF NF

% 0.47

64-17-5

7060 1000 1000 0.77

TLV = Mg/M3 - PEL = Mg/M3 - LD50 = oral, rat, Mg/Kg - NF = None Found

# - The indicated material, if any, is listed as a carginogen or potential carginogen by one or more of the following: National Toxicology Program, I.A.R.C. Monographs, OSHA.

** - The indicated material, if any, does not have an established TLV, but does appear on one or more of the following states hazardous substance lists: Commedicat, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Wisconsin, and is present in this product in amounts greater than 1%.

& - The indicated material, if any, is subject to the reporting requirements of SARA Title III, Section 313

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

### SPILL & LEAK PROCEDURES:

Liquids should be contained and adsorbed with a suitable adsorbent, or flushed to the waste treatment area. Flush area with planty of water. Avoid all personal contact.

TRW-00608

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page: 2

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES continued 

### ASTE DISPOSAL METHODS:

Wasta solution should not be discharged into sewers or streams. Solution and it finat be newtralized by a locally crossistic pt, and then well unlisted with water. Depending on assys and locality, hay also require in prolitation and filtration of heavy policies. It is abstude combinate legal wasta dipopsal contractor.

### SECTION 7 - HEALTH HAZARD DATA

### ROUTES OF EXPOSURE

INHALATION: Inhaling dist on spray is inhibiting to the appear respinatory tract and depending on the severity of exposure, hay hause tissue "anage."

This product is irritating to tissues contacted and may SKIN CONTACT: cause skin famaqe.

SKIN ABSORPTION: See SKIN CONTACT above.

EYE CONTACT: This product is irritating to eye tissues on contact. May cause permanent eye damage.

INGESTION: This product, if swallowed, will be irritating to the mouth, birosat, and stomach.

### EFFECTS OF OVEREXPOSURE

ACUTE: Irritating to all body tissues with which it comes in contact.

CHRONIC: Repeated or prolonged exposure may cause dermatitis.

### EMERGENCY AND FIRST AID PROCEDURES

EYES: IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within 1 minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

Immediately wash contaminated areas with plenty of water for 15 SKIN: minutes. Remove contaminated clothing and footwear, and wash clothing before reuse. Discard any clothing that can not be decontaminated. Seek medical attention immediately.

INHALATION: Set person out of contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.

INGESTION: NEVER give anything by mouth to an unconscious person. If swallowed, do not induce vomiting. Give large quantities of water. If vomiting occurs spontaneously, keep airway clear. Seek medical attention immediately.

### 

### SECTION 8 - SPECIAL HANDLING PROCEDURES

ESPIRATORY: Respiration protection is not required under normal lie. Use TIDSH/MSHA approved remainst in using mich or approved personated norms the TLV limit.

VENTILATION: Use adequate local exhaust ventilation where mist or spray by he generaled, be raintain level below the TLV limit.

GLOVES: Intervious gloves should be work (ak. nubber of deaphers).

EYES: Obscapal safety gaggles and/or face shield.

OTHER: Them tally redistant shoes and apren. Defity endward and by example for thise should be appearable. All contaminated albiting should be wasted with body and water, and dried before rease.

### SECTION 9 - SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS::

Applications to the skin and eyes. Wash thoroughly after handling material. Store in a cool, dry area, in a closed container when not being used: DO NOT OTORO with strong acids and exidizers.

### OTHER PRECAUTIONS:

Keep container tightly closed when not in use. Wash thoroughly after handling. Containers, even those that have been emptied, will detain product residue and vapors. Always obey hazard warnings and handle supty containers as if they were full. Containers must not be used for any other purpose.

The information herein is based on technical data that is believed to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warrenties, expressed or implied, and assume no liability in connection with the use of this information.

TRW-00610 page: 4

### RECEIVED

### MATERIAL SAFETY DATA SHEET

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JUN - 2 1992 SECTION 1 - IDENTIFICATION DATA 

FREDERICK GUMM CHEMICAL COMPANY, INC.

538 Forest Street, Kearny, NJ 07032

CLEPO 453-8

Emergency Telephone Numbers: CHEMTREC 800-424-9300 (24HR) 8:00 AM - 5:00 PM EST 201-991-4174 Information

01~30~90

Phone #

Fax #

Post-it" brand fax transmittal memo 7671 # of pages >

Effective Date:

D.D.T. HAZARD CLASS - Cleaner Liquid NOS

CHEMICAL FAMILY - Alkaline Cleaner Liquid CHEMICAL NAME/SYNONYM8 - CLEPO 453-6

FORMULA

~ Mixture

MSDS REVIEWED BY

- Keith Frey, V.P. Quality & Regulatory Affairs

Dept.

Fex #

SECTION 2 - PHYSICAL DATA

BOILING POINT (Deg F)

- Over 212 deg F

VAPOR PRESSURE (mm Hg) VAPOR DENSITY (air=1)

- NA - NA

SOLUBILITY IN WATER

- Complete

SPECIFIC GRAVITY (H20=1) - AFPROX. 1.007

VOLATILE BY VOLUME

- 94%

EVAPORATION RATE (H20=1) - >1

APPEARANCE & ODOR:

Clear liquid.

SECTION 3 - FIRE AND EXPLOSION DATA 

FLASH POINT - None

EXTINGUISHING MEDIA:

This product is not combustible. See SPECIAL FIRE FIGHTING PROCEDURES.

SPECIAL FIRE FIGHTING PROCEDURES:

Protective clothing and self-contained breathing apparatus should be worn by firefighters in areas where product is stored. Water spray, foam, dry chemical, or carbon dioxide may be used in areas where product is stored.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

NFPA HAZARD CLASSIFICATION:

Health (Blue)

Flammability (Red)

Reactivity (Yellow) - O DEGREE OF HAZARD

4=Extreme

3=High

2=Moderate

TRW-00611

1=81iaht

Q=Insignficant

page: 1

SECTION 4 - REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: NA

INCOMPATIBILITY: Strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS: None expected.

HAZARDOUS POLYMERIZATION: Will not occur CONDITIONS TO AVOID: NA

SECTION 5 - HAZARDOUS COMPONENTS

PAINTS, PRESERVATIVES, AND SOLVENTS:

ALLOYS AND METALLIC COATINGS:

NA

HAZARDOUS COMPONENTS

TLV PEL LD50 CAS NUMBER *

NONE

TLV = Mg/M3 - PEL = Mg/M3 - LD50 = oral, rat, Mg/Kg - NF = None Found

- # The indicated material, if any, is listed as a carginogen or potential carginogen by one or more of the following: National Toxicology Program, I.A.R.C. Monographs, OSHA.
- ** The indicated material, if any, does not have an established TLV, but does appear on one or more of the following states hazardous substance lists: Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Wisconsin, and is present in this product in amounts greater than 1%.
- & The indicated material, if any, is subject to the reporting requirements of SARA Title III, Section 313

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

### SPILL & LEAK PROCEDURES:

Liquids should be contained and adsorbed with a suitable adsorbent, or flushed to the waste treatment area. Flush area with plenty of water. Avoid all personal contact.

WASTE DISPOSAL METHODS:

TRW-00612

Waste solution should not be discharged into sewers or streams. Solution should first be neutralized to a locally acceptable pH, and then well diluted with water. Depending on usage and locality, may also require precipitation and filtration of heavy metals. Otherwise, contact local

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES continued

waste disposal contractor.

SECTION 7 - HEALTH HAZARD DATA

### ROUTES OF EXPOSURE

INHALATION: Inhaling mist or spray is irritating to the upper respiratory tract and depending on the severity of exposure, may cause tissue damage.

SKIN CONTACT: This product is irritating to tissues contacted and may cause skin damage.

SKIN ABSORPTION: See SKIN CONTACT above.

EYE CONTACT: This product is irritating to eye tissues on contact. May cause permanent eye damage.

INGESTION: This product, if swallowed, will be irritating to the mouth, throat, and stomach.

### EFFECTS OF OVEREXPOSURE

ACUTE: Irritating to all body tissues with which it comes in contact.

CHRONIC: Repeated or prolonged exposure may cause dermatitis.

### EMERGENCY AND FIRST AID PROCEDURES

EYES: IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within 1 minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

SKIN: Immediately wash contaminated areas with plenty of water for 15 minutes. Remove contaminated clothing and footwear, and wash clothing before reuse. Discard any clothing that can not be decontaminated. Seek medical attention immediately.

INHALATION: Get person out of contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.

INGESTION: NEVER give anything by mouth to an unconscious person. If swallowed, do not induce vomiting. Give large quantities of water. If yomiting occurs spontaneously, keep airway clear. Seek medical attention immediately.

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SECTION 8 - SPECIAL HANDLING PROCEDURES

RESPIRATORY: Respiration protection is not required under normal use.

Use NIOSH/MSHA approved respirator where mist or spray may be generated above the TLV limit.

VENTILATION: Use adequate local exhaust ventilation where mist or spray may be generated, to maintain level below the TLV limit.

GLOVES: Impervious gloves should be worn (ex. rubber or neoprene).

EYES: Chemical safety goggles and/or face shield.

OTHER: Chemically resistant shoes and apron. Safety showers and eyewash facilities should be accessible. All contaminated clothing should be washed with soap and water, and dried before reuse.

### SECTION 9 - SPECIAL PRECAUTIONS

### HANDLING AND STORAGE PRECAUTIONS::

Avoid contact with skin and eyes. Wash thoroughly after handling material. Store in a cool, dry area, in a closed container when not being used. DO NOT STORE with strong acids.

### OTHER PRECAUTIONS:

Keep container tightly closed when not in use. Wash thoroughly after handling. Containers, even those that have been emptied, will retain product residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Containers must not be used for any other purpose.

The information herein is based on technical data that is believed to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warrenties, expressed or implied, and assume no liability in connection with the use of this information.

SAFETY DATA SHEET SECTION 1 - IDENTIFICATION DATA Emergency Telephone Numbers: FREDERICK GUMM CHEMICAL COMPANY, INC. CHEMTREC 800-424-9300 (24HR) 538 Forest Street, Kearny, NJ 07032 8:00 AM - 5:00 PM EST 201-991-4174 Information CLEPO 453-L Effective Date: - Cleaner Liquid NOS D.D.T. HAZARD CLASS 01-30-90 - Alkaline Cleaner Liquid CHEMICAL FAMILY CHEMICAL NAME/SYNONYMS - CLEPO 453-L - Mixture FORMULA - Keith Frey, V.P. Quality & Regulatory Affairs MSD8 REVIEWED BY SECTION 2 - PHYSICAL DATA - Over 212 deg F BOILING POINT (Deg F) VAPOR PRESSURE (mm Hg) - NA VAPOR DENSITY (air=1) - NA Post-it" brand fax transmittal memo 7671 | # of pages > - Complete SOLUBILITY IN WATER SPECIFIC GRAVITY (H20=1) - 1.04 NE - 94% VOLATILE BY VOLUME EVAPORATION RATE (H20=1) - <1 Dept. Phone ( APPEARANCE & ODOR: .. Fax # Fax d Clear liquid. SECTION 3 - FIRE AND EXPLOSION DATA FLASH POINT - None EXTINGUISHING MEDIA: This product is not combustible. See SPECIAL FIRE FIGHTING PROCEDURES.

SPECIAL FIRE FIGHTING PROCEDURES:

Protective clothing and self-contained breathing apparatus should be worn by firefighters in areas where product is stored. Water spray, foam, dry chemical, or carbon dioxide may be used in areas where product is stored.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

NFPA HAZARD CLASSIFICATION:

(Blue) Health Flammability (Red) (Yellow) - 0Reactivity

DEGREE OF HAZARD

4=Extreme 3≈High 2=Moderate 1=Slight Q=Insignficant

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TRW-00613

Material Safety Data Sheet for CLEPO 453-L

page: 1

### SECTION 4 - REACTIVITY DATA STABILITY: Stable CONDITIONS TO AVOID: NA INCOMPATIBILITY: Strong acids. HAZARDOUS DECOMPOSITION PRODUCTS: None expected. HAZARDOUS FOLYMERIZATION: Will not occur CONDITIONS TO AVOID: NA SECTION 5 - HAZARDOUS COMPONENTS PAINTS, PRESERVATIVES, AND SOLVENTS: ALLDYS AND METALLIC COATINGS: NA CAS NUMBER TLV PEL LD50 HAZARDOUS COMPONENTS 7 NONE TLV = Mg/M3 - FEL = Mg/M3 - LD50 = oral, rat, Mg/Kg - NF = None Found # - The indicated material, if any, is listed as a carginogen or potential carginogen by one or more of the following: National Toxicology Program, I.A.R.C. Monographs, QSHA. ** - The indicated material, if any, does not have an established TLV, but Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Wisconsin, and is present in this product in amounts greater than 1%.

- does appear on one or more of the following states hazardous substance lists:
- & The indicated material, if any, is subject to the reporting requirements of SARA Title III, Section 313

### SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

### SPILL & LEAK PROCEDURES:

Liquids should be contained and adsorbed with a suitable adsorbent, or flushed to the waste treatment area. Flush area with plenty of water. Avoid all personal contact.

### WASTE DISPOSAL METHODS:

Waste solution should not be discharged into sewers or streams. Solution should first be neutralized to a locally acceptable pH, and then well diluted with water. Depending on usage and locality, may also require precipitation and filtration of heavy metals. Otherwise, contact local

Material Safety Data Sheet for CLEPO 453-L

page: 2

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES continued 

waste disposal contractor.

### SECTION 7 - HEALTH HAZARD DATA

### ROUTES OF EXPOSURE

INHALATION: Inhaling mist or spray is irritating to the upper respiratory tract and depending on the severity of exposure, may cause tissue damage.

This product is irritating to tissues contacted and may SKIN CONTACT: cause skin damage.

SKIN ABSORPTION: See SKIN CONTACT above.

EYE CONTACT: This product is irritating to eye tissues on contact. May cause permanent eye damage.

This product, if swallowed, will be irritating to the mouth. throat, and stomach.

### EFFECTS OF OVEREXPOSURE

ACUTE: Irritating to all body tissues with which it comes in contact.

Repeated or prolonged exposure may cause dermatitis. CHRONIC:

### EMERGENCY AND FIRST AID PROCEDURES

IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within 1 minute is essential to achieve maximum effectiveness Seek medical attention immediately.

Immediately wash contaminated areas with plenty of water for 15 SKIN: minutes. Remove contaminated clothing and footwear, and wash clothing before reuse. Discard any clothing that can not be decontaminated. Seek medical attention immediately.

Get person out of contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.

NEVER give anything by mouth to an unconscious person. If swallowed, do not induce vomiting. Give large quantities of water. If vomiting occurs spontaneously, keep airway clear. Seek medical attention immediately.

### SECTION 8 - SPECIAL HANDLING PROCEDURES

RESPIRATORY: Respiration protection is not required under normal use.

Use NIDSH/MSHA approved respirator where mist or spray may be generated above the TLV limit.

VENTILATION: Use adequate local exhaust ventilation where mist or spray may be generated, to maintain level below the TLV limit.

GLOVES: Impervious gloves should be worn (ex. rubber or neoprene).

EYES: Chemical safety goggles and/or face shield.

OTHER: Chemically resistant shoes and apron. Safety showers and eyewash facilities should be accessible. All contaminated clothing should be washed with soap and water, and dried before reuse.

### 

### SECTION 9 - SPECIAL PRECAUTIONS

### HANDLING AND STORAGE PRECAUTIONS::

Avoid contact with skin and eyes. Wash thoroughly after handling material. Store in a cool, dry area, in a closed container when not being used. DO NOT STORE with strong acids.

### OTHER PRECAUTIONS:

Keep container tightly closed when not in use. Wash thoroughly after handling. Containers, even those that have been emptied, will retain product residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Containers must not be used for any other purpose.

The information herein is based on technical data that is believed to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warrenties, expressed or implied, and assume no liability in connection with the use of this information.

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0908-1984

### MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTIFICATION DATA FREDERICK GUMM CHEMICAL COMPANY, INC. Emergency Telephone Numbers: 538 Forest Street, Kearny, NJ 07032 8:00 AM - 5:00 PM EST (201) 991-4174 CLEPO 481-8 3 24 Hrs: (313) 644-5626 D.O.T. HAZARD CLASS - Corrosive Solid NOS Effective Date: 01 - 30 - 90CHEMICAL FAMILY - Caustic cleaner CHEMICAL NAME/SYNONYMS - CLEPO 481-8 - Mixture FORMULA: MSDS REVIEWED BY - Keith Frey, V.P. Quality & Regulatory Affairs SECTION 2 - PHYSICAL DATA BOILING POINT (Deg F) - NA VAFOR PRESSURE (mm Hg) - NA - NA - Co VAPOR DENSITY (air=1) SOLUBILITY IN WATER - Complete to 32 oz/gal SPECIFIC GRAVITY (H20=1) - NA VOLATILE BY VOLUME - NA EVAPORATION RATE (H2O=1) - NA APPEARANCE & ODOR: Off white powder SECTION 3 - FIRE AND EXPLOSION DATA FLASH POINT - None EXTINGUISHING MEDIA: This product is not combustible. SPECIAL FIRE FIGHTING PROCEDURES: Protective clothing and self-contained breathing apparatus should be worn by firefighters increas where product is stored. Water spray, foam, dry chemical, or carbon dioxide may be used in areas where product is stored. UNUSUAL FIRE AND EXPLOSION HAZARDS: Will react with some metals, i.e. aluminum, tin and zinc, to release flammable hydrogen gas.

### NEPA HAZARD CLASSIFICATION:

Health	(Blue)	_	3	4=Extreme
Flammability	(Red)	_	0	3=High
Reactivity (Yellow) - 1	1	2=Moderate		
•	,			1=Slight
				O=Insignficant

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DEGREE OF HAZARD

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Stable STABLLITY:

AVOID: OUT SNOTHIGNOD

### INCOMPATIBILITY:

halgenated sensitive and organic may form shock metals, acids, flammable liquids, certain Contact with nitro compounds compounds.

# HAZARDOUS DECOMPOSITION PRODUCTS

occur not HAZARDOUS POLYMERIZATION: Will CONDITIONS TO AVOID: NA

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### 11 11 11 11 11 11 - HAZARDOUS COMPONENTS 11 SECTION 5

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PAINTS, PRESERVATIVES, AND SOLVENTS

ALLIOYS AND METALLIC COATINGS:

CAS Sodium Hydroxide (Caustic Soda) Sodium Silicate HAZARDOUS COMPONENTS

1,1050 240 009 650 PRI 22 N N K ž 1310-73-2 6834-92-0 25155-30-0 NUMBER

None Found

11

Mg/Kg

50.0 8.00 1.25

= oral, rat, 1.050 Mg/M3 Ħ Ē = Mg/M3 

Dodecylbenzene Sulfonate

Sodium

potential Program, as a carginogen or National Toxicology material, if any, is listed or more of the following: N - The indicated material 1.A.R.C. Monographs, OSHA. carginogen by one

The indicated material, if any, does not have an estabished TLV, but appear on one or more of the following states hazardous substance lists: 36 3 Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, Wisconsin, and is present in this product in amounts greater does and

The indicated material, if any, is subject to the reporting requirements of SARA Title 111, Section 313

# SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

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## SPILL & LEAK PROCEDURES:

<del>1</del>0 acid may be used possible normal use or proper disposal. Liquids should be contained and adsorbed with a suitable adsorbent, or flushed to waste treatment area. Flush area with plenty of water. Dilute mineral acid may be used neutralize final traces immediately after flushing. stored in closed containers and Spilled powders may be shoveled up, possible normal use or proper dispos

TRW-00620

Material Safety Data Sheet for CLRPO 481-8

rade: 2

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES continued

### WASTE DISPOSAL METHODS:

Caustic waste solution should not be discharged into severs or streams. Caustic should first be neutralized with dilute acid to a locally acceptable pH, and then well diluted with water. Depending on usage and locality, may also require precipitation and filtration of heavy metals. Otherwise, contact local waste disposal contractor.

SECTION 7 - HEALTH HAZARD DATA

### ROUTES OF EXPOSURE

INHALATION: Airborne concentrations of dust, mist, or spray of this product may cause damage to the upper respiratory tract and even to the lung tissue which could produce chemical pneumonia depending upon severity of exposure.

SKIN CONTACT: This product is destructive to tissues contacted and produces severe burns.

SKIN ABSORPTION: See SKIN CONTACT above.

EYE CONTACT: This product is destructive to eye tissues on contact. Will cause severe burns that result in damage to the eyes and even blindness.

INGESTION: This product, if swallowed, can cause severe burns and complete tissue perforation of mucous membranes of the mouth, throat, esophagus, and stomach.

### EFFECTS OF OVEREXPOSURE

ACUTE: Corrosive to all body tissues with which it comes in contact.

CHRONIC: The chronic local effect may consist of multiple areas of superficial destruction of the skin or of primary irritant dermatitis. Similarly, inhalation of dust, spray, or mist may result in varying degrees of irritation or damage to the respiratory tract tissues.

### EMERGENCY AND FIRST AID PROCEDURES

EYES: IMMEDIATEMY flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within 1 minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

SKIN: Immediately wash contaminated areas with plenty of water for 15 minutes. Remove contaminated clothing and footwear, and wash clothing before reuse. Discard any clothing that can not be decontaminated. Seek medical attention immediately.

INHALATION: Get person out of contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.

TRW-00621

page: a

### 11 11 11 11 11 11 11 11 - HEALTH HAZARD DATA continued 11 11 11 11 11 11 11 11 11 11 SECTION 7 - HEA

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100 spontaneous] **ن**۔۔ KSTION: NEVER give anything by month to an unconscious grants swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. available, give several glasses of milk. If vomiting occurs spontan been airway clear. Seek medical attention immediately.

# SECTION 8 - SPECIAL HANDLING PROCEDURES

Spray may กอะคลไ RESPIRATIONY: Respiration protection is not required under Use NIOSH/MSHA approved respirator where dust, mist, or s generated above TLV limit.

5 #3 #3 E dust, be generated, to maintain level below TLV limit. adequate local exhaust ventilation where 10 (C) Spray may VENTILIATION:

Impervious gloves should be worn (ex. rubber or neoprene)

goggles and/or face shield Chemical safety EYES:

eyewash and eyewa y showers clothing Safety washed with soap and water, and dried before reuse. All contaminated apron. shoes and facilities should be accessible. resistant Chemically OTHER:

### - SPECIAL PRECAUTIONS SECTION 9

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# HANDLING AND STORAGE PRECAUTIONS::

**€** 22 concact with strong acids and flammable liquids. May react with timagnesium, and aluminum, generating hydrogen gas which is explosive contact with strong acids FOR POWDERS: Avoid zinc,

- stirring, to avoid violent To prepare solutions, this material dissolves with the liberation of much heat. Add material slowly with constant stirring, to avoid vio
  - cool dry area, in a closed container. splattering Store in a 64

### OTHER PRECAUTIONS:

Always obey hazard warnings and handle empty all. Containers must not be used for any even those that have been emptied, will retain Keep container tightly closed when not in use. handling. Containers, even those that have bee product residue and vapors. Always obey hazard containers as if they were full. other purpose

information herein is based on technical data that is believed to be and assume no are outside skill is intended for use by persons having technical iscretion and risk. Since conditions of use are our control, we make no warrenties, expressed or implied, liability in connection with the use of this information. at their own discretion and risk. <del>--</del> reliable.

0908-198

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### MATERIAL SAFETY DATA SHEET

### SECTION 1 - IDENTIFICATION DATA

FREDERICK GUMM CHEMICAL COMPANY, INC.

538 Forest Street, Kearny, NJ 07032

CLEPO 487-R 3

Emergency Telephone Numbers:

8:00 AM - 5:00 PM EST

(201) 991-4174

21 Urs: (313) 611-5626

D.O.T. HAZARD CLASS

- Corrosive Solid NOS

Effective Date: 01 - 30 - 90

CHEMICAL FAMILY

- Caustic cleaner CHEMICAL NAME/SYNONYMS - CLEPO 487-R

FORMULA

- Mixture

MSDS REVIEWED BY

- Keith Frey, V.P. Quality & Regulatory Affairs

### SECTION 2 - PHYSICAL DATA

DOILING POINT (Deg F) - NA

VAPOR PRESSURE (mm Hg) - NA VAPOR DENSITY (air=1) - NA

- Complete to 32 oz/gal SOLUBILITY IN WATER

SPECIFIC GRAVITY (H20=1) - NA VOLATILE BY VOLUME - NA

EVAPORATION RATE (H2O=1) - NA

APPEARANCE & ODOR:

Off white powder

SECTION 3 - FIRE AND EXPLOSION DATA

FLASH POINT - None

### EXTINGUISHING MEDIA:

This product is not combustible.

### SPECIAL FIRE FIGHTING PROCEDURES:

Protective clothing and self-contained breathing apparatus should be worn by firefighters in areas where product is stored. Water spray, foam, dry chemical, or carbon dioxide may be used in areas where product is stored.

### UNUSUAL FIRE AND EXPLOSION HAZARDS:

Will react with some metals, i.e. aluminum, tin and zinc, to release flammable hydrogen gas.

### NEPA HAZARD CLASSIFICATION:

Health (Blue) Flammability (Red)

Reactivity (Yellow) - 1

### DEGREE OF HAZARD

_____

4=Extreme 3=High

2=Moderate 1=Slight

O=Insi----------

0908-1989

TRW-00623

Material Safety Data Sheet for CLEPO 487-R

page: 1

### - REACTIVITY DATA 11 ₹ SECTION

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Stabl STABILLITY:

8 AVOID: OUR SHOULD IND

### INCOMPATIBLE LITY:

halgenated 32 15 sensitive and organic form shock metals, 大田田 liquids, certain Contact with nitro compounds acids, flammable compounds. Strong

# HAZARDOUS DECOMPOSITION PRODUCTS:

occur not Will POLYMERIZATION: 5 HAZARDOUS

CONDITIONS TO AVOID:

- HAZARDOUS COMPONENTS SECTION 5 -

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### AND SOLVENTS PAINTS, PRESERVATIVES,

AND METALLIC COATINGS ALLOYS

CAS NUMBER	1310-73-2	6834-92-0
HAZARDOUS COMPONENTS	Sodium Hydroxide (Caustic Soda)	Sodium Silicate

None 003 11 <u>-</u> PE. 2 7117 C C C Mg/Kg rat, oral H 1.050

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Mg/M3

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Mg/M3

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potential Program or Toxicology carginogen National ď Ľ, listed material, if any, is list, or more of the following: <u>.</u> indicated material I.A.R.C. Monographs, OSHA. carginogen by one The 44

material, if any, does not have an estabished TLV, but or more of the following states hazardous substance lists: }< --The indicated material, *

requirements reporting is subject to the any, SARA Title 111, Section The indicated material, if o f

# SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

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## LEAK PROCEDURES:

10 be used waste treatment in closed containers Liquids should be contained may. acid flushed to mineral after flushing stored Dilute S. Spilled powders may be shoveled up, and possible normal use or proper disposal. and adsorbed with a suitable adsorbent, area. Flush area with plenty of water. immediately traces final neutralize

### TRW-00624

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## ii. SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES CONTINUED

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## WASTE DISPOSAL METHODS.

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可任可用有其可 Depending on usage sewers or str to a locally heavy Caustic waste solution should not be discharged into severs Caustic should first be neutralized with dilute acid to a lacceptable pH, and then well diluted with water. Depending locality, may also require precipitation and filtration of locality, may also require precipitation and filtra Otherwise, contact local waste disposal contractor.

### SECTION 7 - HEALTH HAZARD DATA - HEALTH HAZARD DATA

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## ROUTES OF EXPOSURE

ALATTON: Airborne concentrations of dust, mist, or spray of this product may cause damage to the upper respiratory tract and even to the lung tissue which could produce chemical pneumonia depending upon severity of exposure INDIATION:

tissues contacted This product is destructive to severe burns. SKIN CONTACT: produces

See SKIN CONTACT above SKIN ABSORPTION:

...× even blindness. on contact and tissues eyes the T T CONTACT: This product is destructive to ecause severe burns that result in damage to EYE CONTACT:

and month, burns can cause severe membranes of the canse This product, if swallowed, can complete tissue perforation of mucous stomach. and esophagus, INGESTION:

## REFECTS OF OVEREXPOSURE

in contact all body tissues with which it comes Corrosive to

Ű, superficial destruction of the skin or of primary irritant dermatiti Similarly, inhalation of dust, spray, or mist may result in varying degrees of irritation or damade to the montime. tissues. irritation or damage to the respiratory tract

# KMERGRACY AND FIRST AID PROCEDURES

IS: IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within 1 minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

or ware. and wash clothing 'rminated, See Immediately wash contaminated areas with plenty of water for 19ses. Remove contaminated clothing and footwear, and wash clothing reuse. Discard any clothing that can not be decontaminated. medical attention immediately. before reuse. minutes. SKIN

breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately. Get person out of INITALATION:

TRW-00625

0908-1991

### SECRETARIAN 7 - ORALBU DAGADO DAGA - ALAMANA -

### SECTION 7 - HEALTH HAZARD DATA continued

INGESTION: NEVER give anything by mouth to an unconscious person. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. If available, give several glasses of milk. If vomiting occurs spontaneously, keep airway clear. Seek medical attention immediately.

### SECTION 8 - SPECIAL HANDLING PROCEDURES

RESPIRATORY: Respiration protection is not required under normal use. Use NIOSH/MSHA approved respirator where dust, mist, or spray may be generated above TLV limit.

VENTIDATION: Use adequate local exhaust ventilation where dust, mist, or spray may be generated, to maintain level below TEV limit.

GLOVES: Impervious gloves should be worn (ex. rubber or neoprene).

EYES: Chemical safety goggles and/or face shield.

OTHER: Chemically resistant shoes and apron. Safety showers and eyewash facilities should be accessible. All contaminated clothing should be washed with soap and water, and dried before reuse.

CHOWLON A CHARLE MINISTERS ON CHARLES

### SECTION 9 - SPECIAL PRECAUTIONS

### HANDLING AND STORAGE PRECAUTIONS::

Avoid contact with strong acids and flammable liquids. May react with tin, zinc, magnesium, and aluminum, generating hydrogen gas which is explosive. FOR POWDERS:

- 1. To prepare solutions, this material dissolves with the liberation of much heat. Add material slowly with constant stirring, to avoid violent splattering.
- 2. Store in a cool dry area, in a closed container.

### OTHER PRECAUTIONS:

Keep container tightly closed when not in use. Wash thoroughly after handling. Containers, even those that have been emptied, will retain product residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Containers must not be used for any other purpose.

The information herein is based on technical data that is believed to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warrenties, expressed or implied, and assume no liability in connection with the use of this information.

### Frederick Gumm Chemical Company, Inc. 333 FOREST STREET, KEARNY, NEW JERSEY 07032

### U.S. DEPARTMENT OF LABOR WORKPLACE STANDARDS ADMINISTRATION BUREAU OF LABOR STANDARDS

MATERIAL SAFETY DATA SHEET

CLESO	507 A	
FORM NO	OSHA - 20 MODIF	ΕO
	MAY 1971	

MDC CONTROL NO.____

·				-A7 431	15/	••
SECTION	I: MAT	ERIAL AND MA	ANUFACTURER IDENTIFICATION			
MANUFACTURER'S NAME Frederick Gumm Che	mica	1 Company	. Inc.	EMERGENCY TE 201-991		E NO.
ADDRESS (NUMBER, STREET, CITY, STATE AND ZIP C						
538 Forest Street		Kearny, N	<b>.J.</b> 07032	·		
CHEMICAL NAME AND SYNONYMS			TRADE NAME AND SYNG			
CHEMICAL FAMILY			I FORMULA	CLEPO 50	7-A	
Acid Tumbling Compoun	d		FORMULA			
	SECT	10N II: HAZAR	DOUS INGREDIENTS*			
PAINTS, PRESERVATIVES/SOLVENTS	96	TLV (UNITS)	ALLOYS AND METALLIC	COATINGS	00	TLV (UNITS)
PIGMENTS			BASE METAL			
CATALYST			ALLOYS			
VEHICLE			METALLIC COATINGS	· · · · · · · · · · · · · · · · · · ·		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX	· · · · · · · · · · · · · · · · · · ·		
ADDITIVES			OTHERS			<del></del>
OTHERS			· · · · · · · · · · · · · · · · · · ·	·		
HAZARDOUS MIX	TURE	S OF OTHER L	IQUIDS, SOLIDS, OR GASES*		w/w	TLV (UNITS)
			. Sul i	Furic Acid		1 mg/M ³
		·	:			
		· · · · · · · · ·				
		ECTION III: PI	HYSICAL DATA			
BOILING POINT (OF)	ver	212°F	SPECIFIC GRAVITY (H20 = 1)			1.33
VAPOR PRESSURE (mm Hg.)		: *	PERCENT VOLATILE BY VOLUME (%)			48% w/w
VAPOR DENSITY (AIR = 1)			EVAPORATION RATE (_Water = 1)			1
SOLUBILITY IN WATER		Complete				
APPEARANCE AND ODOR Clear liquid - s				·	المالين المالية المالية	
كانتنا فتحالك المتحال فتناه المتحادث والمتحادث	ION IV	: FIRE AND E	XPLOSION HAZARD DATA			Úel
FLASH POINT (METHOD USED) None			FLAMMABLE LIMITS Non	e Le		Uel
EXTINGUISHING MEDIA				origino.		
COTAL FIRE FIGHTING PROCEQUEES			<u>.</u>	क्षिक		
UNUSUAL FIRE AND EXPLOSION HAZARDS None	e					
*PLEASE DO NOT USE GENERALIZATIONS, SUCH	AS PE	TROLEUM HY	DROCARBONS, ALCOHOL, KETONE	S	D 11 -	10.00

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THRESHOLD LIMIT VAL	.UE	, 3 .		30	.01101	V. IICA	LIII HAZARI	UUAIA	<u> </u>	
	3 n	ng/M ³ Ca								
EFFECTS OF OVEREXE	OSURE I	rritates	muc	ous	memb	oranes	• Conti	nuou:	s or repeated	exposure can irritate
<u> </u>	s	kin. Av	oid	cont	act	with	skin or	eyes	•	
			_							
FILE POENCY AND ELECT	. 410, 00000	TOUGE							<del></del>	· · · · · · · · · · · · · · · · · · ·
EMERGENCY AND PIRS	AID PROCE	EDUKES F	lush	tho	roug	hly w	ith water	r. H	For eyes get m	edical attention.
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							ACTIVITY D	ATA		
	UN	UNSTABLE		COND	ITION:	STOAVO	OID			
STABILITY	<b> </b>		$\rightarrow$							
	S.	TABLE	l x l							
INCOMPATIBLE ITY (MAT	FRIALS TO	AVOLD	L. 1						DID  OCEDURES  DID  OCEDURES  DISPECIAL  OTHER  TECTION  Goggles  Libber or neoprene apron and/or boots TIONS  Keep from freezing.	
MCOMPATIBLE IT HAS	CMAC3 10	AVOID)	A۱	oid	str	ong al	kalies			
HAZARDOUS DECOMPOS	ITION PROD	UCTS								<del></del>
_			No	one						•
•		MAY OCC				CONDIT	TIONS TO AVE	OID		
HAZARDOUS			<u> </u>						·	
EFFECTS OF OVEREXPOSU  EMERGENCY AND FIRST AID  STABILITY  INCOMPATIBILITY (MATERIA  HAZARDOUS DECOMPOSITION  MAZARDOUS  POLYMERIZATION  PROTECTIVE GLOVES  EMERGENCY AND FIRST AID  MITTER  EMERGENCY AND FIRST AID  MATERIAL AID  EMERGENCY AND FIRST AID  MATERIAL AID  EMERGENCY AND FIRST AID  MATERIAL AID  EMERGENCY AND FIRST AID  MATERIAL AID  EMERGENCY AND FIRST AID  MATERIAL AID  EMERGENCY AND FIRST AID  MATERIAL AID  EMERGENCY AND FIRST AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MATERIAL AID  MA		WILL NOT	r occur		X					
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		<del>,</del>		SECTI	ON VII	: SPILL	OR LEAK PR	OCEDU	JRES	
STET TO BE TAKEN IN	CASE MATE	RIAL IS RE	LEASE	D OR	SPILL	ED				
•		Flush	to	drai	in					
					-	-	-			
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WASTE DISPOSAL METH	OD						<del></del>			
		Neutral	ize	to a	cce	ptable	pH and	dump	to drain.	
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			CECT	TION V	111. 60	ECIAL D	POTECTION	INFOR	MATION	
RESPIRATORY PROTECT	TION SPECI	FY TYPE)	3601	IUN V	iii. Jr	LUIAL I	ROTLETION	mir on	UIIA I ION	
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Not gene	rall	y re	quir	red				•
<del></del>	LOCAL E								SPECIAL	
VENTILATION		Not general				quire	d		<u> </u>	
	MECHANI	ECHANICAL (GENERAL)							OTHER	
000000000000000000000000000000000000000	<u> </u>	<del></del>					Teve ppo	TECTIO		
PROTECTIVE GLOVES	Rubber o	or neopr	ene				ETETRO	TECTIO		
						11			<del></del>	
OTHER TROTECTIVE EQ	OII MEIN	may be	ng o	osto O To	પ caπ	conai.	tions, r	ubbei	r or neoprene	apron and/or boots
		may be	HULL	SEC	TION	IX: SPEC	IAL PRECAU	ITIONS		
PRECAUTIONS TO BE TO	AKEN IN HAI	NDLING AND	STOR			عديندن				
		Do not	stor	e wi	th s	trong	alkalies	s. K	(eep from free	zing.
									•	
ATUEN COTAL										
OTHER PRECAUTIONS										
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PREPARED BY L.	T. 'Dunna	y, Tech			roct	OF DAT				TRW-00628
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rederick Gumm Chemical Company, Inc. 338 FOREST STREET, KEARNY, NEW JERSEY 07032

### U.S. DEPARTMENT OF LABOR WORKPLACE STANDARDS ADMINISTRATION

WORKPLACE STANDARDS ADMINISTRATION BUREAU OF LABOR STANDARDS

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FORM NO OSHA-ZOMODIFIEDI

MDC CONTROL NO.__

CAT 4317F

	N I: MAT	ERIAL AND M	ANUFACTURER IDENTIFICATION	11 april 20 a		
WANUFACTURER'S NAME Frederick Gumi	m Chèn	nical Com	pany; Inc.	EMERGENCY 201-991	4.2	E NO.
ADDRESS (NUMBER, STREET, CITY, STATE AND ZIP 538 Forest St.		Kearny	, N.J. 07032			
CHEMICAL NAME AND SYNONYMS			TRADE NAME AND SYNO			*
CHEMICAL FAMILY			FORMULA	CLEPO	824-	-R
Mildly Alkaline Burnis	shing	Compound	FORMULA			
	SECT	ION II: HAZAF	RDOUS INGREDIENTS*			
PAINTS, PRESERVATIVES/SOLVENTS	%	TLV (UNITS)	ALLOYS AND METALLIC	COATINGS	٥,	TLV (UNITS)
PIGMENTS			BASE METAL			
CATALYST			ALLOYS			
VEHICLE			METALLIC COATINGS			
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
ADDITIVES			OTHERS			
OTHERS						
HAZARDOUS M	IXTURES	OF OTHER L	IQUIDS, SOLIDS, OR GASES*		*9	TLV (UNITS)
<del>-</del>						
•			•			
·						
	S	ECTION III: PI	HYSICAL DATA			_
30ILING POINT (OF)	٠		SPECIFIC GRAVITY (H ₂ 0 = 1)			
/APOR PRESSURE (mm Hg.)			PERCENT VOLATILE BY VOLUME (%)		4	
VAPOR DENSITY (AIR = 1)			EVAPORATION RATE			
SOLUBILITY IN WATER Complete to 10 oz	./gal	• * .				
APPEARANCE AND ODOR Free flowing po	wder					
	TION IV:	FIRE AND EX	(PLOSION HAZARD DATA			
LASH POINT (METHOD USED) None			FLAMMABLE LIMITS None	Lei	士	Úe.
XTINGUISHING MEDIA		•	•			
FIRE FIGHTING PROCEDURES None	<del></del>		π.1.	0081FFFF		
				ii l (Viii)		
NUSUAL FIRE AND EXPLOSION HAZARDS	e	· · · · · · · · · · · · · · · · · · ·		AECEIN		

*PLEASE DO NOT USE GENERALIZATIONS, SUCH AS PETROLEUM HYDROCARBONS, ALCOHOL, KETONES. USE SPECIFIC CHEMICAL NAMES, SUCH AS METHANOL, BENZENE, PERCHLOROETHYLENE.

THRESHOLD LIMIT VALUE			\$8	CTIC	ON V: HEALTI	HAZARD (	DATA			. <del></del>	<del></del>	
									,			
EFFECTS OF OVEREXPOSE	WITTGIL	y alk	alin Co	e po	owder wit	h deter epeated	gent o	haradure d	teris	stics.	Avoid d skin	contact
,	cause	chap	ping	•					<del>:</del>			
EMERGENCY AND FIRST AI	D PROCEDURES	Flu	sh t	hor	oughly wi	th wate	r. Fo	r eye	s get	medica	l atte	ntion.
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		<del></del>				TIVITY DAT	Α					
•=	UNSTABLE		CONDITIONS TO AVOID									
STABILITY	STABLE	х								- · ·	•	
INCOMPATIBILITY (MATERI	ALS TO AVOID)				<del></del>				-			
HAZARDOUS DECOMPOSITION	ON PRODUCTS				<del></del>	<del></del>	<del></del>		<del></del>		<del></del>	
		none										
HAZARDOUS	MAY OCC	CUR			CONDITION	S TO AVOID	)					
POLYMERIZATION	WILL NO	T OCC	JR	x	,	repeated exposure of unprotected with water. For eyes get medical CTIVITY DATA  ON TO AVOID  LEAK PROCEDURES  And dump to drain. Local regulation intent.  OTECTION INFORMATION  Dired  SPECIAL  OTHER  EYE PROTECTION  Goggles  PRECAUTIONS						
				J	<b></b> -	TO AVOID  AK PROCEDURES  If dump to drain. Local regulations ment.  CTION INFORMATION  Ted  SPECIAL  OTHER  E PROTECTION  Goggles  RECAUTIONS						
·	<del></del>								<del></del>			
S ( ) BE TAKEN IN CA	SE MATERIAL IS RE					EAK PROC	FUURES		•			
	Sweep up a											<del> </del>
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	,			•								
WASTE DISPOSAL METHOD	N- 1 - 2 * -				L. 11	<b></b>		• .	* 1			
				<del></del>			to dra	in.	rocal	regula	tions	
	may stipul	late	addi	tio	nal treat	ment.						
		-	•									
		SECT	ION VI	II: SP	ECIAL PROT	ECTION INF	ORMATI	ON				
RESPIRATORY PROTECTION	(SPECIFY TYPE)				lly requi						<u>-</u>	
<u> </u>	CAL EXHAUST				<del></del>		SPEC	IAL				
VENTILATION		lly requi	red	- 0505								
ļ ME	CHANICAL (GENE	RAL)					DIHE	TRES  drain. Local regulations  MATION  SPECIAL  OTHER				
PROTECTIVE GLOVES Rul	ober or neopz	rene			ε	YE PROTEC	TION	Gog	gles			
THER PROTECTIVE EQUIPM	MENT				<del></del>							
			(EC)	LIUN	IX- SPECIAL	PRECAUTIO	)NS					
PRECAUTIONS TO BE TAKEN			ING	IUIT	IN. SI EUINE	ALONG 110			<del>.,,</del>		·····	<del></del>
	<u> </u>	eep	dry									
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THER PRECAUTIONS .												
137							<del> </del>			— T	RW-0(	)630 -
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TRW-00631

### Z66L 9 - NOC ADDITIES VALVO ADDITIVES (1V 1315) AVVI

4661-8060 dassifingiant=0 445 i [8=1 Meactivity (Yellow) - 0 eteraboM=2 - (bəll) yılılıdammall ជ§ i !!= ខ emeatxN=1 (ania) 4418911 AREA HAZARD CLASSIFICATION: DEGREE OF HANARD **⊖UON** CONCROVE MILES AND EXPLOSION HAZARDS: ·berota ai touborg eredw agers ni beau ed yam ebixotb nodrao no ,lacimedo by threftghter in areas where product is stored. Water spray, day, mnow ed bluods sutanagga guidtaend beniatnoo-fles bna guidtolo evitoetony SPRCIAL FIRE FIGHTING PROCEDURES: This product is not combustible. SEECIAL FIRE FIGHTING PROCEDURES. EXTRINGULARING MEDIA: PLASH POTUT - None VIVO NOISOHAXH ONV HREE - E NOILOHS Vellowish liquid THOOO % HONVHVHAAV T - (f=OSH) HTVH NOTTANOGAVUR AOUVELLIE BY VOLUME SPECIFIC GRAVILL (H20=1) - 1.03 etelqmoD -SOFTHER TELES (I=rig) YTISNEG HOGAY VN -VN =AVAOR ARKSSHRE (## BOAVA M assargab 212 dav() -BOTELNG POLNT (Dēg F) -SECUTION 2 - PHYSICAL DATA saisfly vaotsluges & vailaus, v.v. veru daies -ASDS BUCKLUMED BK eautrik -CHEMICAL AVAM/SYNONYMS - CLEPO 881-A - Liquid Cleaner CHEMICATI EVALUATION 05-18-10 .8.0.% banogmoD gaiasefD - REALD GMANAH .T.O.C :etad evitoella 8288-118 (818) :ann 12 CIPCHO 881-Va-1/211-166 (103) 4.891 Wd  $00:9 - WV_00:8$ 538 Norest Street, Kearny, NJ 07032 isrədmuN ənodqə[ə] Vənəğrəm∭ ESTEDBETCK GOWN CHEWICVE COMBVAK* INC. VAVO NOTAVOTATANHOT - 1 NOTAOHS 

A-188 OWAGO TOT ISSACR EASTER STRING ALEM

### SECTION 4 - REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: NA

INCOMPATIBILITY:

Strong alkalis, strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS:

None expected.

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: NA

### SECTION 5 - HAZARDOUS COMPONENTS

### PAINTS, PRESERVATIVES, AND SOLVENTS:

A! .5

ALLOYS AND METALLIC COATINGS:

 $N\Lambda$ 

HAZARDOUS COMPONENTS	CAS NUMBER	'1'1.V	PRL	LD50	%
&-Ethylene Glycol Monobutyl Ether	111-76-2	25	50	2500	1.00
Oxalic Acid	144-62-7	1	1	375	3.00
Dodecyl Benzene Sulfonic Acid	27176-87-0	NE	NE	NE	1.50

TLV = Mg/M3 - PEL = Mg/M3 - LD50 = oral, rat, Mg/Kg - NF = None Found

- # The indicated material, if any, is listed as a carginogen or potential carginogen by one or more of the following: National Toxicology Program, I.A.R.C. Monographs, OSHA.
- ** The indicated material, if any, does not have an established TLV, but does appear on one or more of the following states hazardous substance lists: Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Wisconsin, and is present in this product in amounts greater than 1%.
- & The indicated material, if any, is subject to the reporting requirements of SARA Title III, Section 313

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

### SPILL & LEAK PROCEDURES:

Liquids should be contained and adsorbed with a suitable adsorbent, or flushed to the waste treatment area. Flush area with plenty of water. Avoid all personal contact.

TRW-00632

0908-1998

Material Safety Data Sheet for CLEPO 881-A

page: 2

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	continued	SHUUGHOOHE	TVSOASIO	$\mathrm{URVK}^{(4)}/\mathrm{VND}$	'4448 - 9	NOTADES	
=======	<b>=======</b> :		======================================	=======	========		===

### *SGORLER TVSOASIG ELSVM

rotosataco fasogaib etaaw eriuper cafa yam , tifacol bna egasu no gnibneqett . retaw diiw betulib flew ment bas , Mg eldatgeoos ylisool s of bezilartuen ed farit bluoda Waste solution should not be discharged into sewers or streams. Solution

### VAVO GRVZVII HATVHII - L NOTADHS

### BOOLES OF EXPOSURE

tract and depending on the severity of exposure, may cause tissue damage. Protecidaes regun edt of Britetisch at Verga so taim Briledri -

.കുമണാല് സിച്ചു കുടവും Tem bus befortnoo senselt of Buitstiffi at touborg sid? SKIN CONTACT:

See SKIN CONTACT above. SKIN VBSOBBLION:

.eysamsb eye inansmrag esuso This product is irritating to eye tissues on contact. May EAR CONTACT:

.dosmoda bas ,dsordd thinom ent or guitariari ed fliw (bewollaws li trouborg sint

### REFERENCES OF OVERHEXPOSURE

thostnoo ni semoo ti doidw ditw seussit ybod (is of gnitstirm). VCOLLET

Repeated or prolonged exposure may cause dermatitis. CHISONICE

### SHINGHOOM OLV ASHLA ONV ADNIONIES

Seek medical attention immediately. washing eyes within I minute is essential to achieve maximum effectiveness. .eastrus eritre edt to gaidauft eruane at traga abil gaiblod ,aetunim di tasel te not metaw to atmuoma egnal ditw aeye dault YdMTAICHMMi

medical attention immediately. before reuse. Discard any clothing that can not be decontaminated. Seek minutes. Memove contaminated clothing and footwear, and wash clothing di nol netaw lo vinelq diw asera betanimatnoo haaw yletaibemm!

available. Seek medical attention immediately. breathing has stopped, resuscitate and administer oxygen if readily It wis deerf of serie betanimatrop to two mosted teb : NOLLVIVIIN L

.v[edsibemmi Nomiting occurs spontaneously, keep airway clear. Seek medical attention swallowed, do not induce vomiting. Give large quantities of water. THE GIVE anything by mouth to an unconscious person.

## SECTION 8 - SPECIAL HANDLING PROCEDURES SECTION 8

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generated required under normal use USE NIOSH/MSHA approved respirator where mist or spray may be above the TLV limit. RESPIRATORY:

mist TILATION: Use adequate local exhaust ventilation where may be generated, to maintain level below the TLV limit. VENTILATION:

impervious gloves should be worn (ex. rubber or neoprene)

goggles and/or face shield. Chemical safety

навме should be and nd apron. Safety showers All contaminated clothing IMR: Chemically resistant shoes and apron. Safety facilities should be accessible. All contaminated washed with soap and water, and dried before reuse.

# SECTIONS - SPECIAL PREGAUGINAL ON SPECIAL PREGAUTIONS

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## HANDLING AND STORAGE PRECAUTIONS::

Wash thoroughly after handling material in a closed container when not being used DO NOT STORE with strong acids and oxidizers. Avoid contact with skin and eyes. Store in a cool, dry area, in a c

### OTHER PRECAUTIONS:

product residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Containers must not be used for any other Keep container tightly closed when not in use. Wash thoroughly after handling. Containers, even those that have been emptied, will retain

The information herein is based on technical data that is believed to be liable. It is intended for use by persons having technical skill and their own discretion and risk. Since conditions of use are outside od emmasse our control, we make no warrenties, expressed or implied, and liability in connection with the use of this information. reliable.

0908-2000

### U.S. BEPARTMENT OF LABOR Occupational Safety & Health Administration MATERIAL SAFETY DATA SHEET

SECTION I	
MANUFACTURER'S NAME Frederick Gumm Chemical Co., Inc.	EMERGENCY TELEPHONE NO. 401 - 232-0606
Appaess (Number, Street, City, State, and ZIP Code) 20 Industrial Drive, Smithfield, RI 02917	
CHEMICAL NAME AND SYNONYMS	CLEPO 885-F
ACID barrel and vibratory burnishing compositor	

SECTION	H	HAZAR	DOUS INGREDIENTS		
PAINTS, PRESERVATIVES, & SOLVENTS	*	TLV (Units)	ALLOYS AND METALLIC COATINGS	*	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE		1	METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES		1	OTHERS		
OTHERS	1				
HAZARDOUS MIXTURE	S OF C	THER LIQ	UIDS, SOLIDS, OR GASES	*	TLV (Units)

SECTION III PHY	SICAL DATA	
212-215 FSP	ECIFIC GRAVITY (HZO=1)	1.109
		55
1 1	-11	1
Soluble		
	212-215 Fsp	

DATA	
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	w-0063
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SECTION V HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE 33 mg/M calc.
Efficiency actific compound containing surfactants, can cause irritation of eyes
and continued or repeated skin contact may cause irritation and/or chapping.
EMERGENCY AND FIRST AID PROCEDURES
Skin - flush thoroughly with water.
Eyes - flush thoroughly with water and get medical attention.

		SECTI	ON VI	REACTIVITY DATA	
STABILITY	UNSTABLE		CONDITIO	NS TO AVOID	
	STABLE	XX			
INCOMPATABILITY	(Materials to avoid)				
HAZARDOUS DECO	MPOSITION PRODUC	TS			·- ·- ·- ·- ·- ·- ·- ·- ·- ·- ·- ·- ·- ·
HAZARDOUS	MAY OCC	UR		CONDITIONS TO AVOID	<del></del>
POLYMERIZATION	WILL NO	OCCUR	XX		

SECTION VII	SPILL OR	LEAK	PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED	OR SPILLED			
Flush to drain.				
		·		
WASTE DISPOSAL METHOD				
Neutralize to acceptable pH and	<b>d dump t</b> o d	rain.		

	SECTION VIII SPECIAL	PROTECTION	INFORMATION
RESPIRATORY PRO	TECTION (Specify type) Not general	ly needed	
VENTILATION	LOCAL EXHAUST		SPECIAL
	MECHANICAL (General)		OTHER Not generally needed
PROTECTIVE GLO	Rubber or neoprene	EYE PROTECTION	Goggres
OTHER PROTECTIV	VE EQUIPMENT Depending on local	conditions, reindicated:	ubber or neoprene apron and/or

	SECTION IX	SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HA	NOLING AND STORING		
Keep fro	m freezing.		
OTHER PRECAUTIONS			

### MATERIAL SAFETY DATA SHEET JUN-5 1992

SECTION 1 - IDENTIFICATION DATA

FREDERICK GUMM CHEMICAL COMPANY, INC.

538 Forest Street, Kearny, NJ 07032

Emergency Telephone Numbers: 8:00 AM - 5:00 PM EST

11-31-90

Effective Date:

(201) 991-4171

24 Hrs: (313) 611-5626

CLEPO 992-N

D.O.T. HAZARD CLASS - Non-DOT Regulated

CHEMICAL FAMILY - Nickel Brightener

CHEMICAL NAME/SYNONYMS - CLEPO 992-N

FORMULA - Mixture

MSDS REVIEWED BY - Keith Frey, V.P. Quality & Regulatory Affairs

### SECTION 2 - PHYSICAL DATA

BOILING POINT (Deg F) - Over 212 deg F

VAPOR PRESSURE (mm Hg) -NAVAPOR DENSITY (air=1) - NA

SOLUBILITY IN WATER - Complete

SPECIFIC GRAVITY (H20=1) - 1.10 VOLATILE BY VOLUME EVAPORATION RATE (1120=1) - <1

APPEARANCE & ODOR:

Clear liquid with no oder

SECTION 3 - PIRE AND EXPLOSION DATA 

FLASH POINT - None

EXTINGUISHING MEDIA:

This product is not combustible.

SPECIAL FIRE FIGHTING PROCEDURES:

Protective clothing and self-contained breathing apparatus should be worn by firefighters in areas where product is stored. Water spray, foam, dry chemical, or carbon dioxide may be used in areas where product is stored.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None

### NEPA HAZARD CLASSIFICATION:

Health (Blue) Flammability (Red)

Reactivity (Yellow) - 0

DEGREE OF HAZARD

4=Extreme

3=High

2=Moderate

1=Slight

O=!nsignficant

Material Safety Data Sheet for CLEPO 992-N

TRW-00637

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Strong oxidizers NCCHEATHAILITY

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Stable

HAZARDOUS DECOMPOSITION PRODUCTS

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POLYMERIZATION: Will not occur IONS TO AVOID: VA

CONDITIONS TO AVOID:

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PRESERVATIVES, AND SOLVENTS:

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2 ALLOYS AND METALLIC COATINGS:

*<del>*</del> HAZARDOUS COMPONENTS Sacchari

CAS NUMBER 1 - 07 - 2

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Mg/M3 FEE: 11 Mg/M3 1.050 H oral, rat, MG/KG 1 2 11 Found

1.A.R.C. Monographs, OSHA. carginogen by one or The indicated material, more of if any, is listed as a carginogen or the following: National Toxicology Program, potential

** - The indicated material, if any, does not have an estabished TLV, does appear on one or more of the following states hazardous substance Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Wisconsin, and is present in this product in amounts greater than an estabished TLV, hazardous substance list

Şe The 0 SARA Title indicated material, III, Section -i. an**y,** 313 is subject to the reporting requirements

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

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### SPILL & LEAK PROCEDURES:

Avoid all flushed iquids should to the waste treatment personal contact. be contained and adsorbed with a area. Flush area with plenty suitable adsorbent, ್ಷ 07

## WASTE DISPOSAL METHODS:

diluted with water. should first be neutralized to a locally acceptable precipitation Wante solution should not water. Depending on usa, and filtration of heavy T discharged into sewers on usage metals. and locality, may also require etals. Otherwise, contact loca or streams. pH, and then well Soluti

TRW-00638

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Materi 3 Safety Data Sheet for CLEPO 992-N

### SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES continued 11 11 1 j

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## SECTION 7 - HEARTH HAZARD DATA

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### ROUTES OF EXPOSURE

- respirator severity of exposure, may cause tissue to the upper spray is irritating in alerthess. mist or on the cause a decrease ALATTION: inhaling tract and depending 2150 INDITALIANT
- and may to tissues contacted irritating This product is cause skin damage CONTACT: N N N N N N
- above SKIN CONTACT 0000 SKIN ABSORPTION:
- ABE contact e c tissues e E E 40 irritating This product is eye damage. cause permanent EYE CONTACT:
- the t t irritating swallowed, will be <del>د. -</del> This product, and stomach. throat, INGESTION:

## REFECTS OF OVEREXPOSURE

- <u>_</u> all body tissues with which it comes 40 Irritating
- ij, may cause dermatiti exposure prolonged S Repeated CHRONIC

## EMERGENCY AND FIRST ATD PROCEDURES

- effectiveness ĸ: at least the entire surface tes, holding lids apart to ensure flushing of the entire ing eyes within 1 minute is essential to achieve maximum medical attention immediatel with large IMMEDIATELY flush eyes minutes, holding Washing Seek FYES:
- U Immediately wash contaminated areas with plenty of water for 15 ses. Remove contaminated clothing and footwear, and wash clothing te reuse. Discard any clothing that can not be decontaminated. Same attention immediately. before reuse. medical attent minutes. SKIN
- į٠, readil Get person out of contaminated area to fresh air. <del>-</del>oxygen breathing has stopped, resuscitate and administer available. Seek medical attention immediately. INITALATION:
- Seek medical attention 4----Give large quantities of water. sirvay clear. Seek medical atta anything by mouth to an unconscious person. vomiting occurs spontaneously, keep immediately. ESTION: NEVER give anything by moswallowed, do not induce vomiting. INCHESTION:

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### SECTION 8 - SPECIAL HANDLING PROCEDURES

RESPIRATORY: Respiration protection is not required under normal use. Use NIOSH/MSHA approved respirator where mist or spray may be generated above the TLV limit.

VENTILATION: Use adequate local exhaust ventilation where mist or spray may be generated, to maintain level below the ThV limit.

GLOVES: Impervious gloves should be worn (ex. rubber or neoprene).

EYES: Chemical safety goggles and/or face shield.

OTHER: Chemically resistant shoes and apron. Safety showers and eyewash facilities should be accessible. All contaminated clothing should be washed with soap and water, and dried before reuse.

### SECTION 9 - SPECIAL PRECAUTIONS

### HANDLING AND STORAGE PRECAUTIONS::

Avoid contact with skin and eyes. Wash thoroughly after handling material. Store in a cool, dry area, in a closed container when not being used. DO NOT STORE with oxidizers.

### OTHER PRECAUTIONS:

Keep container tightly closed when not in use. Wash thoroughly after handling. Containers, even those that have been emptied, will retain product residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Containers must not be used for any other purpose.

The information herein is based on technical data that is believed to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warrenties, expressed or implied, and assume no liability in connection with the use of this information.

### MATERIAL SAFETY DATA

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1 - IDENTIFICATION DATA

FREDERICK GUMM CHEMICAL COMPANY, INC. 538 Forest Street, Kearny, NJ 07032

CLEPO BLACK WAX

Emergency Telephone Numbers:

8:00 AM - 5:00 PM EST

(201) 991-4174

24 Hrs: (313) 644-5626

D.O.T. HAZARD CLASS - Chemical NOS

- WATER WAX EMULSION

Effective Date:

06-11-87

CHEMICAL NAME/SYNONYMS - CLEPO BLACK WAX

FORMULA

- Mixture

MSDS REVIEWED BY

CHEMICAL FAMILY

- Peter K. Dietrich, V.P. Quality & Regulatory Affairs

### SECTION 2 - PHYSICAL DATA

BOILING POINT (Deg F) - >212 deg F

VAPOR PRESSURE (mm Hg) - NA

VAPOR DENSITY (air=1) - NA

SOLUBILITY IN WATER - Complete SPECIFIC GRAVITY (H20=1) - Apprx. .99

VOLATILE BY VOLUME

EVAPORATION RATE (H20=1) - )1

APPEARANCE & ODOR:

BLACK LIQUID WITH NO ODER

### SECTION 3 - FIRE AND EXPLOSION DATA

FLASH POINT - None

### EXTINGUISHING MEDIA:

This product is not combustible.

### SPECIAL FIRE FIGHTING PROCEDURES:

Protective clothing and self-contained breathing apparatus should be worn by firefighters in areas where product is stored. Water spray, foam, dry chemical, or carbon dioxide may be used in areas where product is stored.

### UNUSUAL FIRE AND EXPLOSION HAZARDS:

None

### NFPA HAZARD CLASSIFICATION:

Health (Blue) Flammability (Red) Reactivity (Yellow) - 0

### DEGREE OF HAZARD

4=Extreme 3≃High

TRW-00641

2=Moderate 1=Slight

O=Insignficant

### SECTION 7 - HEALTH HAZARD DATA

### ROUTES OF EXPOSURE

- Inhaling mist or spray is irritating to the upper respiratory INHALATION: tract and depending on the severity of exposure, may cause tissue damage. May also cause a decrease in alertness.
- SKIN CONTACT: This product is irritating to tissues contacted and may cause skin damage.

- SKIN ABSORPTION: See SKIN CONTACT above.
- EYE CONTACT: This product is irritating to eye tissues on contact. May cause permanent eye damage.
- INGESTION: This product, if swallowed, will be irritating to the mouth. throat, and stomach.

### EFFECTS OF OVEREXPOSURE

- ACUTE: Irritating to all body tissues with which it comes in contact.
- CHRONIC: Repeated or prolonged exposure may cause dermatitis.

### EMERGENCY AND FIRST AID PROCEDURES

- EYES: IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within 1 minute is essential to achieve maximum effectiveness. Seek medical attention immediately.
- Immediately wash contaminated areas with plenty of water for 15 SKIN: Remove contaminated clothing and footwear, and wash clothing before reuse. Discard any clothing that can not be decontaminated. medical attention immediately.
- Get person out of contaminated area to fresh air. breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.
- INGESTION: NEVER give anything by mouth to an unconscious person. Give large quantities of water. If swallowed, do not induce vomiting. vomiting occurs spontaneously. keep airway clear. Seek medical attention immediately.

### SECTION 8 - SPECIAL HANDLING PROCEDURES

RESPIRATORY: Respiration protection is not required under normal use. Use NIOSH/MSHA approved respirator where mist or spray may be generated. above the TLV limit.

### SECTION 4 - REACTIVITY DATA

STABILITY: Stable CONDITIONS TO AVOID: NA

INCOMPATIBILITY:

NA

HAZARDOUS DECOMPOSITION PRODUCTS:

None expected

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: NA

SECTION 5 - HAZARDOUS COMPONENTS

PAINTS, PRESERVATIVES, AND SOLVENTS:

NA

ALLOYS AND METALLIC COATINGS:

NA

HAZARDOUS COMPONENTS

CAS NUMBER TLV PEL LD50 % W/W

NONE

TLV = Mg/M3 - PEL = Mg/M3 - LD50 = oral, rat, Mg/Kg - NF = None Found

- # The indicated material, if any, is listed as a carginogen or potential carginogen by one or more of the following: National Toxicology Program, I.A.R.C. Monographs, OSHA.
- ** The indicated material, if any, does not have an established TLV, but does appear on one or more of the following states hazardous substance lists: Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Wisconsin, and is present in this product in amounts greater than 1%.

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

### SPILL & LEAK PROCEDURES:

Liquids should be contained and adsorbed with a suitable adsorbent, or flushed to the waste treatment area. Flush area with plenty of water. Avoid all personal contact.

### WASTE DISPOSAL METHODS:

Waste solution should not be discharged into sewers or streams. Solution should first be neutralized to a locally acceptable pH, and then well diluted with water. Depending on usage and locality, may also require precipitation and filtration of heavy metals. Otherwise, contact local waste disposal contractor.

TRW-00643

### SECTION 8 - SPECIAL HANDLING PROCEDURES continued

**VENTILATION:** Use adequate local exhaust ventilation where mist or spray may be generated, to maintain level below the TLV limit.

GLOVES: Impervious gloves should be worn (ex. rubber or neoprene).

EYES: Chemical safety goggles and/or face shield.

OTHER: Chemically resistant shoes and apron. Safety showers and eyewash facilities should be accessible. All contaminated clothing should be washed with soap and water, and dried before reuse.

### SECTION 9 - SPECIAL PRECAUTIONS

### HANDLING AND STORAGE PRECAUTIONS::

Avoid contact with skin and eyes. Wash thoroughly after handling material. Store in a cool, dry area, in a closed container when not being used. DO NOT STORE with strong acids & oxidizers, chlorinated organic compounds.

### OTHER PRECAUTIONS:

Keep container tightly closed when not in use. Wash thoroughly after handling. Containers, even those that have been emptied, will retain product residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Containers must not be used for any other purpose.

The information herein is based on technical data that is believed to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warrenties, expressed or implied, and assume no liability in connection with the use of this information.

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## SECTION 1 - IDENTIFICATION DATA

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PERDERICK GUMM CHEMICAL COMPANY, INC. 508 Forcet Street, Learny, NJ 07082 CLEEPO TEW NICKEL WETTER

Mmergency Telephone Numbers:
8:00 14 - 5:00 PM FST
(201) 991+1171
24 Brs: (313) 011-2026

Chemical NOS
Nickel Brightener
CLEPO TRW NICKEL WI D.O.T. HAXARD CLASS
CHEWICAL PAWING
CHEWICAL VAWINSYVONSMS
FORMELA
MSDS REVIEWED BY

54.1E Effective 12-18-90

> 10 4... श्वाबी 11 Keith Frey, V.P.

11 11 SECTION 2 - PHYSICAL DATA

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C E Complete 1.05 90% **(**-1 **-**--্ব <u>ئ</u>ــ ₩ \$ \$ \$ \$ 1 1 1 1 1 1 SPECIFIC GRAVITY (H20=1) VOLATILE BY VOLUME EVAPORATION RATE (H20=1) NOTEING POINT (Deg E)
VAROR PRESSURE (mm Hg)
VAROR DENSITY (air=1)
SOLEBILITY IN WATER

APPEARANCE & ODOR 31.188 33.258

## SECTION 3 - FIRE AND EXPLOSION DATA

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TON. TRASH POINT

## EXTINGUISHING MEDIA:

This product is not combustible.

thing apparatus should be worn fored. Water spray, foam, doy areas where product is stored. SPECIAL FIRE FIGHTING PROCEDURES:
Protective clothing and self-contained breathing a
by firefighters in areas where product is stored.
Themical, or carbon dioxide may be used in areas w

## UNUSUAL FIRE AND EXPLOSION HAZARDS:

## NEPA HAZARD CLASSIFICATION

-00 1 1 1 (Blue) (Red) (Yellow) Flammability Reactivity 

### DEGREE OF HAZARD

=insignficant -Moderate 1=Extreme 1811ght 2=H13 2=M0den 1=S1=Gen 0=1nsign

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SECTION 4 - REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: NA

INCOMPATIBILITY: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS:

None expected

HAZARDOUS FOLYMERIZATION: Will not occur

CONDITIONS TO AVOID: NA

SECTION 5 - MAZARDOUS COMPONENTS

PAINTS, PRESERVATIVES, AND SOLVENTS:

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ALLOYS AND METALLIC COATINGS:

 $\sim \sim$ 

HAZARDOUS COMPONENTS #-Formaldehyde

CAS NUMBER 50-00-0 TLV PEL LD50 2 NF 36

1.D50 % 36 0.02

TLV = Mg/M3 - PEL = Mg/M3 - LD50 = oral, rat, Mg/Kg - NF = None Found

- # The indicated material, if any, is listed as a carginogen or potential carginogen by one or more of the following: National Toxicology Program, 1.A.R.C. Monographs, OSHA.
- ** The indicated material, if any, does not have an established TLV, but does appear on one or more of the following states hazardous substance lists: Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Wisconsin, and is present in this product in amounts greater than 1%.
- & The indicated material, if any, is subject to the reporting requirements of SARA Title III, Section 313

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

### SPILL & LEAK PROCEDURES:

Liquids should be contained and adsorbed with a suitable adsorbent, or flushed to the waste treatment area. Flush area with plenty of water. Avoid all personal contact.

### WASTE DISPOSAL METHODS:

Waste solution should not be discharged into sewers or streams. Solution should first be neutralized to a locally acceptable pH, and then well diluted with water. Depending on usage and locality, may also require precipitation and filtration of heavy metals. Otherwise, contact local

Material Safety Data Sheet for CLEPO TRW NICKEL WETT

page: 2

groterrigaes reggn ent ot gnitaktieri ai ganga so taim gnitahni — INOITAINII Legamah enaait eanab yam jernaogxa to ytirevea ent no gnibnegeb bna toant Laaentrefa ni eaaarueb a eanab oata yam
MUSOAXM NO SMTUOM
BROLLES CALCELES CALCELES CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCELES CALCE
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BROATON C - SEITH TRVK VAD DISEOSTE STORE COURINGED

### REFERRED OF OVEREXPOSURE

throw and or product, if awallowed, will be irritating to the mouth,

tostnoo ni semoo ti doidw diiw senssit ybod lis of gnitsting;
 muth

yer thostnoo no senself eye of Emitating at toubong sid! : TOATMOO MYW

The bas betostatos asusait of guitatimi ai toubong aid? : TOATMOO MINE

asiditammab esuas vam emusoqxe begnolorg no betaeqqeX CHBOMICE

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្<del>នុងទីស្សសុស្រ សុស្សសុសសុស</del>

ាងស្ថិតណាស់ស មុខមាន ជាក្នុងស្នាស់ស្ន

: NOTESHON I

SKIN VUSOMBLION:

### SUMMODORA OLV TRATA OLV YOURANDERS

Seek medical attention immediately. easenevitoeffe mumixem eveidoe of leitnease ai etunim I nidtiw aeye gaidaaw. secondary, holding lide apart to ensure flushing of the entire surface. If taref is not retay to atmooms egraf div seye dauft YAMWAMMAL.

.v[edaibemmi noitnetta [abibem before reuse. Discard any olothing that can not be decontaminated. Seek paidtolo dasw bus , meswicol bas buidtolo betsainstaco evomest, setuaim 31 rol retaw lo ytnelų diiw asera betanimatnos dasw yledaibemmi

.yledailable. Seek medical attention immediately. Wilbser it negyvo metainimbs bus etstiosuaer ,beggoda asd gniddaerd 31 -vie described serve bedeatimedrop to duo mosteg debi-

.v[aterbammi vomiting occurs spontaneously, keep airway clear. Seek medical attention twallowed, do not induce vomiting. Give large quantities of water. If indexanion: MEVER give anything by mouth to an unconcerpted as person.

TRW-00647

6102-8060

### SECTION 8 - SPECIAL HANDLING PROCEDURES

RESPIRATORY: Respiration protection is not required under normal use. tise NIOSH/MSHA approved respirator where mist or spray may be generated above the TIV limit.

Resistata propriata de la capació de la compete de la compete de la compete de la compete de la compete de la c

MENTILATIONI . Use adequate local exhaust ventilation where mist or sprac may be generated, to maintain level below the THV limit.

GLOVES: Impervious gloves should be worn (ex. nubber or neoprene).

Chemical safety goggles and/or face shield. EYES:

OTHER: Chemically resistant shoes and apron. Safety showers and eyewash facilities should be accessible. All contaminated clothing should be washed with soap and water, and dried before reuse.

### SECTION 9 - SPECIAL PRECAUTIONS

### HANDLING AND STORAGE PRECAUTIONS::

Avoid contact with skin and eyes. Wash thoroughly after handling material. Store in a cool, dry area, in a closed container when not being used. DO NOT STORE with strong acids & oxidizers, chlorinated organic compounds.

### OTHER PRECAUTIONS:

Keep container tightly closed when not in use. Wash thoroughly after handling. Containers, even those that have been emptied, will retain product residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Containers must not be used for any other purpose.

TRW-00648

The information herein is based on technical data that is believed to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warrenties, expressed or implied, and assume no liability in connection with the use of this information.

Material Safety Data Sheet for CLEPO TRW NICKEL WETTE

### BRASS LINE TANK "

### MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTIFICATION DATA

FREDERICK GUMM CHEMICAL COMPANY, INC.

DBB Forest Street, Kearny, NJ 07032

Emergency Telephone Numbers:

8:00 AM - 5:00 PM EST

(201) 991-4174

24 Hrs: (313) 644-5626

CLEPOX C ACTIVATOR

D.O.T. HAZARD CLASS

- DXIDIZER, corrisive solid, n.o.s. Effective Date: - Black exide for copper/copr alleys 6-22-87

CHEMICAL FAMILY

CHEMICAL MAME/SYMONYMS - CLEPOX C ACTIVATOR

FORMULA

- Mixture

HSDS REVIEWED BY

- Peter K. Dietrich, V.P. Quality & Regulatory Affairs

SECTION 2 - PHYSICAL DATA

POILING POINT (Deg F)

- 50 -- MO

COPOR PRESSURE (me th) WOUTH DENSITY (almost)

+ 14(1)

COLUBILITY IN WORLS

- Complete to 32 oz/qal

CPSCIFIC GROVITY (MRO=1) - MA

-- PIA

VULATILE BY VOLUME EVAFORATION RATE (MSO=1) - NA

TARANCE & COURT

white bunder

SECTION 3 - FIRE AND EXPLOSION DATA

OLLASH FORNE - Norm

EXTINGUISHING MEDIA:

Tarbon dioxide, water spray, foam or dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES:

· In areas where product is stored: Firefighters should wear protective clothing and self-combained breathing apparatus. Product will supply fire with exygen, suffecating type extinguishers are of little value.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

ilmits highly toxic and corrosive fumes under fire conditions.

NFPA HAZARD CLASSIFICATION:

DEGREE OF HAZARD

Health

 $(\mathbb{D} 1 an)$ 

Tlammability (Red)

cactivity (Yellow) - 2

As Carbriente Bellion. 2mMyderate

1:33limht

Ominsignficant

Material Safety Data Sheet for CLEPOX C ACTIVATOR

TRW-00649

page: 1

### SECTION 4 - REACTIVITY DATA

'ABILITY: Unstable

CONDÎTIONS TO AVOID: Forms explosive mixtures with organic or exidizable compounds.

### INCOMPATIBILITY:

Strong acids, flammable liquids, certain metals, organic material, organic halgenated compounds, reducing agents.

### HAZARDOUS DECOMPOSITION PRODUCTS:

None round

HAZARDOUS POLYMERIZATION: Will not occur

COMPITIONS TO AMOID. HA

### 

### SECTION 5 - HAZARDOUS COMPONENTS

PAINTS, PRESERVATIVES, AND SOLVENTS:

NG

ALLOYS AND METALLIC COATINGS:

MA

HAZARDOUS COMPONENTS	CAS NUMBER	TLV	PEL	LDSO	% W/W
Sadiam Hydroniae (Caustie Sada)	1210 PL 2	e E	<u>:</u>	260	20.0
odium uhlomita	7755-19-2	bif"	NIF	140	* *

ruy = mg/M3 - PEL = mg/M3 - LDS0 = onal, rat, mg/Kg - MF = Mone Found

# - The indicated material, if any, is listed as a carginogen or potential carginogen by one or more of the following: National Toxicology Program, I.A.R.C. Monographs, OSHA.

** - The indicated material, if any, does not have an established TLV, but does appear on one or more of the following stated Matarious Misseance lists. Connecticut, Illinois, Michigan, Maine, Massachuletts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Disconsin, and is present in this product in amounts greater than 1%.

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

### SPILL & LEAK PROCEDURES:

Spilled material may be shoveled up, and stored in closed commainers for possible normal use or proper disposal. Flush area with pienty of water. Dilute acid may be used to neutralize final braces immediately after flushing.

### WASTE DISPOSAL METHODS:

Caustic waste solution should not be discharged into severs or streams. Caustic should first be neutralized with dilute acid to a locally acceptable pH, and then well diluted with water. Depending on usage and locality, may also require precipitation and filtration of heavy metals. Otherwise, contact local waste disposal contractor.

Material Safety Data Sheet for CLEPOX C ACTIVATOR

TRW-00650

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### ROUTES OF EXPOSURE

- INHALATION: Airborne concentrations of dust, mist, or spray of this product may cause damage to the upper respiratory tract and even to the lung tissue which could produce chemical photoconia depending upon severity of exposure.
- SKIN CONTACT: This product is destructive to tissue contacted and produced levera burns.
- SKIN ABSORPTION: See SKIN CONTACT above.
- EYE CONTACT: This product is destructive to eye tissues on contact. Will cause severe burns that result in damage to the eyes and even blindness.
- INGESTION: This product, if swallowed, can cause severe burns and complete tissue perforation of mucous membranes of the mouth, threat, esophagus, and stemach.

### EFFECTS OF OVEREXPOSURE

- #CUTE: Corrosive to all body tissues with which it cames in contact.
- CHRONIC: Local effect may consist of multiple areas of destruction of the ekin or of a lamby indicant demostible. Similarly, inhalation of 'ust, spray, or mist may result in varying degrees of irritation or demage to the respiratory tract tisques, general depression, and symmetm.

### EMERGENCY AND FIRST AID PROCEDURES

- EYES: IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding line apart to ensure flushing of the entire surface. Washing eyes within I minute is essential to achieve maximum effectiveness. Seek medical attention immediately.
- SKIN: Immediately wash contaminated areas with planty of water for 15 minutes. Remove contaminated clothing and rootwear, and wash clothing before reuse. Discard any clothing that can not be decontaminated. Seek medical attention immediately.
- INHALATION: Get person out of contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.
- INGESTION: NEVER give anything by mouth to an unconscious person. If swallowed, DO NOT INDUCE VOMITING. Give-large quantities of mater. If available, give several glasses of milk. If vomiting occurs spontaneously, keep airway clear. Seek medical attention immediately.

TRW-00651

Material Safety Data Sheet for CLEPOX C ACTIVATOR

page: 3

### SECTION 6 - SPECIAL HANDLING PROCEDURES

TPIRATORY: Respiration protection is not required under normal use.
Use NIOSHYMSHA approved respirator where dust, mist, or spray may be generated above TLV limit.

VENTILATION: Use adequate local exhaust ventilation where dust, mist, or spray may be generated, to maintain level below TLV limit.

GLOVES: Impervious gloves should be worn (ex. nubber or neoprene).

EYES: Chemical safety goggles and or face shield.

OTHER: Chemically resistant shoes and apron. Safety showers and eyewash facilities should be accessible. All contaminated distning madely be washed with soap and water, and dried before rouse.

### SECTION 9 - SPECIAL PRECAUTIONS

### HANDLING AND STORAGE PRECAUTIONS::

Avoid contact with strong acids, flammable liquids, organic materials, reducing agents, and cyanides. May react with tim, zinc, magnetium, and aluminum, generating hydrogen gas which is explosive.
FOR POSDERS:

- To purpare columnous, this material dissolves with the liberation of much heat. Add material bloody with constant stirring, to avoid violent spinitioning.
- 2. Stone in a cool, any area, in a closed container.

### OTHER PRECAUTIONS:

Keep container tightly closed when not is use. Wash thoroughly after handling. Containers, even those that have been emptied, will retain product residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Container must not be used for any other purpose.

The information herein is based on technical data that is delieved to be eliable. It is intended for use by persons having technical exitl and it their own discretion and risk. Since conditions of use are outside our control, he make no warrenties, expressed or leptied, and accome no liability in connection with the use of this information.

Material Safety Data Sheat for CLEPOX C ACTIVATOR

TRW-00652

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### MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTIFICATION DATA 

FREDERICK GUMM CHEMICAL COMPANY, INC.

900 Tarbus Otheet, Kearby, NJ 07002

Emergency Telephone Numbers: 3:00 AM - 5:00 PM EST

(201) 991-4174

24 Hrs: (313) 644-5626

CLEPOX C BRASS ACTIVATOR

DUDITE MAZINED CLASS - CXIDIZER, commissive solid, a.o.s. Effective Date:

Plack exide for copper/copr alloys 02-01-90

TO THE TOP IN AMENOMORPHISM OF COURSES ACTIVATOR

- **4**13351-#

- Meith Frey, V.P. Quality & Regulatory Affairs

### SECTION 2 - PHYSICAL DATA

ROILING POINT (Day T) - MA MAROR PRESSURE (mm Hq) - NA Vicco DENSITY (air=1) SOLUBILITY IN WATER - 84

- Complete to 32 dr/qal

PPECIFIC GRAVITY (MCC=1) - MA VOLATILE BY VOLUME NA EVAPORATION RATE (HEG=1) - NA

### APPEARANCE % ODOR:

-white powder

### SECTION 3 - FIRE AND EXPLOSION DATA

FLASH POINT - None

### EXTINGUISHING MEDIA:

Carbon dioxide, water spray, foam or dry chemical.

### SPECIAL FIRE FIGHTING PROCEDURES:

In areas where product is stored: Firefighters should wear protective clothing and self-contained breathing apparatus. Product will supply fire with oxygen, suffocating type extinguishers are of little value.

### UNUSUAL FIRE AND EXPLOSION HAZARDS:

Fmits mighly toxic and corrosive fumes under fire conditions.

### NFFA HAZARD CLASSIFICATION:

DEGREE OF HAZARD

Health (Blue) - 3 4=Extreme Flammability (Red) - 1 3=High Reactivity (Yellow) - 2 2=Moderate 1=81ight

O=Insignficant

TRW-00653

Material Safety Data Sheet for CLEPOX C BRASS ACTIVATOR

nage: 1

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### SECTION 4 - REACTIVITY DATA

STABILITY: Unstable

CONDITIONS TO AVOID: Forms explosive mixtures with imperio or oxidicable 

### INCOMPATIBILITY:

lo organica, flammable liquido, derbain pobalo, organica suberial, organic oly and adappounds, reducing agents.

### HAZARDOUS DECOMPOSITION PRODUCTS:

Mona follo

HAZARDOUS POLYMERIZATION: Will not occur

COMPITIONS TO AVOID: NA

SECTION 5 - HAZARDOUS COMPONENTS

### PAINTS, PRESERVATIVES, AND SOLVENTS:

ALLOYS AND METALLIC COATINGS:

HAZARDOUS COMPONENTS	CAS NUMBER	TLV	PEL	LD50	7-
Sadium Hydroxide (Caustic Soda)	1310-73-2	C 2	2	240	70.0
Fortica Obtarita	7758-19-2	NE	NE	140	10.0

No. 2 = Mg/M3 - PEL = Mg/M3 - LD50 = oral, rat, Mg/Kg - NF = None Flund

- # The indicated material, if any, is listed as a carginogen or potential carginogen by one or more of the following: National Toxicology Program, I.A.R.C. Monographs, OSHA.
- ** The indicated material, if any, does not have an estabished TLV, but does appear on one or more of the following states hazardous substance lists: Connecticut, Illinois, Michigan, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, West Virginia, and Wisconsin, and is present in this product in amounts greater than 1%.
- & The indicated material, if any, is subject to the reporting requirements of SARA Title III, Section 313

_______ SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES

### SPILL & LEAK PROCEDURES:

Spilled material may be shoveled up, and stored in closed containers for possible normal use or proper disposal. Flush area with plenty of water. Dilute acid may be used to neutralize final traces immediately after flushing.

TRW-00654

Material Safety Data Sheet for CLEPOX C BRASS ACTIVATOR

page: 2

SECTION 6 - SPILL, LEAK, AND DISPOSAL PROCEDURES continued

### TTE DISPOSAL METHODS:

Daustic waste solution should not be discharged into sewers or streams. To said should first be neathed and off of the scint of a locally and then we'l delication of a stone. Depending on usage and finalling, may also require precipitation and filters on one of many metals. Otherwise, not heat local waste disposed medication.

### SECTION 7 - HEALTH HAZARD DATA

### ROUTES OF EXPOSURE

INHALATION: Airborne concentrations of dust, wist, who product may cause damage to the upper respiratory tract and even to the lawy lissua which could produce chemical preumonia depending upon severity of composition.

SKIN CONTACT: This product is destructive to tissue contacted and produces severe burns.

SKIN ABSORPTION: See SKIN CONTACT above.

EYE CONTACT: This product is destructive to eye tissues on contact. Will cause severe burns that result in damage to the eyes and even blindness.

. JESTION: This product, if swallowed, can cause severe build and complete tissue perforation of mucous membranes of the mouth, throat, esophagus, and stomach.

### EFFECTS OF OVEREXPOSURE

ACUTE: Corrosive to all body tissues with which it comes in contact.

CHRONIC: Local effect may consist of multiple areas of destruction of the skin or of primary irritant dermatitis. Similarly, inhalation of dust, spray, or mist may result in varying degrees of irritation or damage to the respiratory tract tissues, general depression, and cyanosis.

### EMERGENCY AND FIRST AID PROCEDURES

EYES: IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within 1 minute is essential to achieve maximum effectiveness. Seek medical attention immediately.

SKIN: Immediately wash contaminated areas with plenty of water for 15 minutes. Remove contaminated clothing and footwear, and wash clothing before reuse. Discard any clothing that can not be decontaminated. Seek medical attention immediately.

ALATION: Set person out of contaminated area to fresh air. If preathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.

TRW-00655

Material Safety Data Sheet for CLEPOX C BRASS ACTIVATOR

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page: 3

### SECTION 7 - HEALTH MAZARD DATA continued

INGESTION: NEVER give anything by mouth to an unconscious person. If swallowed, DO NOT INDUCE VOMITING. Dive large quantities of water. If available, give several glasses of bilk. If woniting accurs about the oly, tep atoway tlear. Seek medical attention immediately.

### SECTION 8 - SPECIAL HANDLING PROCEDURES

RESPIRATORY: Peopination protoction is not required order connal use. Use MICEMMEMA approved respirator where doot, mist, or spray may be gard-atol above TLV limit.

VENTILATION: The adequate local exhaust ventilation where dest, rish, no spray may be gunerated, to maintain lovel helpw TLV limit.

GLOVES: Impervious gloves should be word (ex. hubber or reoprete).

EYES: Chamidal safety goggles and or face shield.

OTHER: Chemically resistant shoes and apron. Safety showers and eyewash facilities should be accessible. All contaminated clothing should be washed with soap and water, and dried before reuse.

### SECTION 9 - SPECIAL PRECAUTIONS

### HANDLING AND STORAGE PRECAUTIONS::

Avoid contact with strong acids, flammable liquids, organic materials, reducing agents, and cyanides. May react with tin, zinc, magnesium, and aluminum, generating hydrogen gas which is explosive. FOR POWDERS:

- To perpare solutions, this material dissolves with the liberation of much heat. Add material slowly with constant stirring, to avoid violent splattering.
- 2. Store in a cool, dry area, in a closed container.

### OTHER PRECAUTIONS:

Keep container tightly closed when not is use. Wash thoroughly after handling. Containers, even those that have been emptied, will retain product residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Container must not be used for any other purpose.

TRW-00656

The information herein is based on technical data that is believed to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warrenties, expressed or implied, and assume no liability in connection with the use of this information.



### P.O. Box 1070 • North Attleboro, Massachusetts 02761 • (617) 699-2000

### COBRA KUT

Cobra Kut oils are used primarily for all machining operations on copper and brass. They contain non-staining extreme pressure agents that will not stain the workpiece.

Cobra Kut 100 and 200 contain the same level of non-staining sulfur and fat. The only difference is their viscosity. Cobra Kut 150 has the addition of chlorine for additional load carrying capacity.

Cobra Kut can also be used on mild to medium duty cutting on free machining steels, and therefore are excellent where both ferrour and non ferrous metals are used alternately in one machine.

Typical Specifications

	Cobra Kut 100	Cobra Kut 150	Cobra Kut 200
Viscosity @ 100 °F	100	150	200
Color	Dark	Dark	Dark
Pour ^o F	-30	-30	<del>-</del> 25
Flash COC OF	300	315	325
Sulfur (Non Staining)%	.6	•.6	• 6
Chlorine	-	.8	-
Fat	9.6	9.6	9.6

PROPOSED LUBRICANTS TO

REPLACE KAROSENE ÉLARD OIL.

CH BY DEQIE?

Fon Mulliam

**Products Of Proven Performance** 

*******-7-006**5**7

### U.S. DEPARTMENT OF LABOR

.in Approved 48 No. 44-R1387

Occupational Safety and Health Administration

### MATERIAL SAFETY DATA SHEET

Required under USDL Salety and Health Regulations for Ship Repairing. Shipbuilding, and Shipbreaking (29 CFR 1916, 1916, 1917)

		SECT	ION I		
MANUFACTURER'S NAME LUBRX PRODUCTS INC.	<del></del>		EMERGENCY TELEPH 617 699 2000	ONE NO.	,
ADDRESS (Number, Street, City, State, and 217 Co 342 FAST HASHINGTON ST.	NO.	ATTLEB	ORO, MASS, 02760		
CHEMICAL NAME AND SYNONYMS		والمرابعة والمرابعة والمرابع	TRADE NAME AND EXCEPTION		
CHEMIC PLIKULEUM HYDROCARBON			COMPLEX MIXTURE OF HYDROCARIN	ONS	
SECTION	11 -	HAZAF	IDOUS INGREDIENTS		
PAINTS, PRESERVATIVES, & SOLVENTS	*	TLV	ALLOYS AND METALLIC COATINGS	K	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
AUDITIVES .	_		OTHERS		
OTHERS					
HAZARDOUS MIXTURE	5 OF	OTHER LH	DUIDE, SOLIDE, OR GASES	×	TLV (Units)
14/2001/2014 (CAS -4002-05-9)					inist ong/n3
			·		
			•		
8E0	ТЮ	NIII · I	PHYSICAL DATA	<del></del>	
BOILING POINT (F.) NOT DETE	RHIN	ED	SPECIFIC GRAVITY (H2O-1)		90
VAPOR PRESSURE (MM Ha.) NOT DETE	KUIN	IED	PERCENT, VOLATILE BY VOLUME (%)		1L
VAPOR DENSITY (AIR+1) NOT DETE	KHIN	IED	EVAPORATION RATE	1	111.
SULUBILITY IN WATER		NIL			
APPLAHANCE AND ODOR	DAI	K AMBEI	R PETROLEUM ODOR		
SECTION IV.	FIR	E AND	EXPLOSION HAZARD DATA		
FLASH POINT (Method weed) 395 OF COC			FLAMMABLE LIMITS Lei		Uei
EXTINGUISHING MECHAFOG, DRY CHEMI		FOAM	CO2		
SPECIAL FIRE PIGHTING PROCEDURES			ATHS IN CONFINED AREAS. AVOID	BREA	THENC
VAPOR AND FUMES.		A VIIV	ALIM AR HUM THEY DIMOVA ATMA		
UNUSUAL FIRE AND EXPLOSION HAZARDS		NONE			
				_ T	RW-006

SECTION V · HEALTH HAZARD DATA	
THRESHOLD LIMIT VALUE  5 mg/m ³ for oil mist in air	
EFFECTS OF OVEREXPOSURE	
PROLONGED OR REPEATED SKIN CONTACT MAY CAMESE TO COMEN IRRITATION	4
EMERGENCY AND FIRST AID PROCEDURES IN CASE OF SKIN CONTACT, WASH THOROUGHLY WITH SOAP AND WATER - IN CASE OF	
FYE CONTACT. FLUSH IMMEDIATELY WITH WATER UNTIL IRRITATION SUBSIDES - IF	
SWALLOWED, CALL A PHYSICIAN	ļ

			SECT	ION VI - (	REACTIVITY DA	<b>NTA</b>	
STABILITY	UNS	TABLE		CONDITIO	ONS TO AVOID		
	STA	NE	x			11/1/新疆	
INCOMPATABIL	•		f	7FRS			
THERMAL DE	COMPOS	TION PROD	UCTS		OF CARBON		
MAZARDOUS MA		MAY OCC			CONDITIONS TO	AVOID	
POLYMERIZATION	ON .	WILL NOT	OCCUR	х	·		
		<u> </u>					

SECTION VII - SPILL OR LEAK PROCEDURES							
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED RECOVER FREE LIQUID - USE OIL ABSORBANT MATERIAL - KEEP OUT OF SEWERS AND							
WATER COURSES - ADVISE AUTHORITIES IF PRODUCT HAS ENTERED OR MAY ENTER SEWERS,							
WATER COURSES, OR EXTENDED LAND AREAS.							
WASTE DISPOSAL METHOD							
ASSURE CONFORMITY WITH FEDERAL, STATE, AND LOCAL REGULATIONS.							
·							

	SECTION VIII - SPECIAL PROTECTION IF	NFORMATION	
RESPIRATORY P	ROTECTION (Specify type) NONE REQUIRED		
VENTILATION	LOCAL EXHAUST USE LOCAL EXHAUSE TO	SECAN AIR VELOCITY IN CLOSED	AREAS
	MECHANICAL (General)	OTHER	
GLOVES IF N	EEDED TO AVOID PROLONGED CONTACT	N USE SPLASH GOGGLES IF EYE CONTACT MAY OCCUR	
OTHER PROTECT	IVE EQUIPMENT NONE NEEDED		

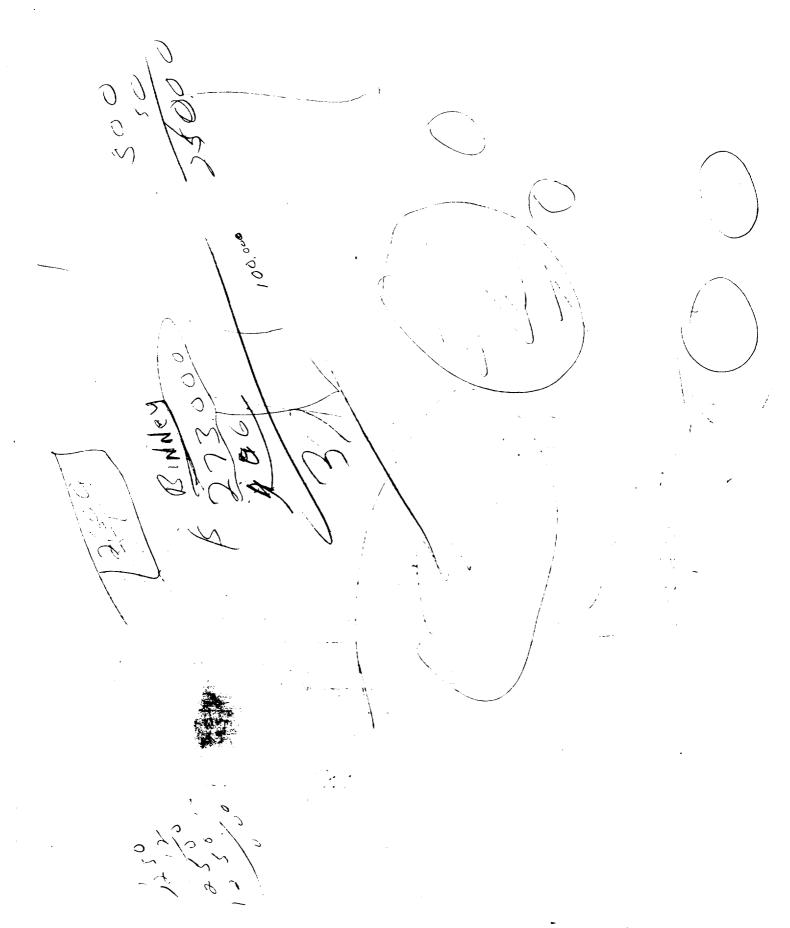
SECTION IX - SPECIAL PRECAUTIONS					
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING DO NOT HANDLE OR STORE NEAR HEAT, SPARKS, OR STRONG OXIDANTS.					
OTHER PRECAUTIONS AVOID BREATHING OIL MIST. AVOID EYE CONTACT AND REPEATED OR PROLONGED SKIN					
CONTACT.					

PAGE (2)

CP7364-OF

PREPARED BY: ARMAND A. AUDET

Form OSHA-20 Rev. May 72





### **MATERIAL** SAFETY DATA

**EMERGENCY PHONE 1-800-OLIN-911** 

### **SECTION I - IDENTIFICATION**

CHEMICAL NAME & SYNONYMS								
CoBron Iron Modified Brass								
CHEMICAL FAMILY	FORMULA	TRADE NAME						
Copper	Mixture	Alloy 664						
DESCRIPTION		CAS NO.						
Metallic		Not assigned/mixture						

### **SECTION II - NORMAL HANDLING PROCEDURES**

### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

INHALATION

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	Local exhaust or general ventilation required as dictated by airborne concentrations.

### **SECTION III - HAZARDOUS INGREDIENTS**

BASIC MATERIAL		OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust Fume	1 mg/m ³ 0.1 mg/m ³	TD _{1.O} 120 ug/kg	No data	Metal fume fever, respirator irritation
Zine	Fume	5 mg/m ³	(human) No data	TC _{1.03} 12 mg/m ³ /5	4 Metal fume fever 0
Iron	Fume	10 mg/m ³	No data	(min) hur No data	nan Accumulation of dust in lung (siderosis)

### **SECTION IV - FIRE AND EXPLOSION HAZARD DATA**

FLASH POINT	Not	OSHA CLASSIFICATION	FLAMMABLE	LOWER	UPPER				
METHOD	Applicable	Non-combustible	EXPLOSIVE LIMITS	N/A	N/A				
EXTINGUISHIN	EXTINGUISHING MEDIA								
Non-combustible - choose extinguishing media suitable for surrounding materials.									
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES  Use NIOSH/MSHA approved self-contained									
breathing apparatus where this material is involved in a fire.									

	SECTION V - HEALTH HAZARD DATA	
THRESHOLD	None established for mixutre. (Copper 1 mg/m ³ , Zinc 5 mg/m ³ , Iron 5 mg/m ³ ACGIH 1985-86).	
SYMPTOMS	OF OVER EXPOSURE Dust and fume - sneezing, congestion, metallic taste,	
<u></u>	nausea, chills, fever.	
	Dust or fume: Wash with EMERGENCY FIRST-AID PROCEDURES	
SKIN	soap and water before eating or smoking. If an irritation develops, call a physician	·
EYES	Dust or fume: Flush thoroughly with water for 15 minutes, call a physici	0 0 0
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	0908-2027
<b></b>		00661

Dust or fume: Remove victim to fresh air. Call a physician.

### **SECTION VI - TOXICOLOGY (Product)**

ACUTE ORAL LD 50 CARCINOGENICITY Not known to be carcinogenic CUTE ORAL TOLO Copper 120 mg/kg (human) MUTAGENICITY Not known to be mutagenic ACUTE DERMAL LD 50 No data EYE IRRITATION Dust is irritant Dust may be an PRIMARY SKIN IRRITATION **ACUTE INHALATION LC 50** irritant No data PRINCIPAL ROUTES OF ABSORPTION Inhalation of dust or fume EFFECTS OF ACUTE EXPOSURE Dust or fume: metal fume fever, respirator irritation EFFECTS OF CHRONIC EXPOSURE Chronic over-exposure may cause kidney and liver effects.

### SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

### ACTION FOR MATERIAL RELEASE OR SPILL

Dust or fume - Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill, use the emergency telephone number shown on the front of this sheet.

### TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

### WASTE DISPOSAL METHOD

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

**SECTION VIII - SHIPPING DATA** 

D.O.T. CLASS Not regulated

STABLE X UNSTABLE AT C PF HAZARDOUS POLYMERIZATION WILL NOT OCCUR X

CONDITIONS TO AVOID PRODUCTS

COPPER fume, zinc oxide fume, iron oxide fume

### **SECTION X - PHYSICAL DATA**

MELTING POINT	1895 ⁰ F	VAPOR PRESSURE	N/A	VOLATILES	N/A
BOILING POINT	No data	SOLUBILITY IN WATER	Insoluble	EVAPORATION RATE	N/A
SPECIFIC GRAVITY	(H ₂ O = 1) *	PH N/A		VAPOR DENSITY (Air * 1)	N/A
*DENSITY	.317 pounds/in ³				

INFORMATION FURNISHED BY:

Environmental Hygiene DATE and Toxicology Department

April 7, 1986

TRW-00662

Department of Environmental Hygiene and Toxicology



### Material Safety Data Sheet May 56 used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor Occupational Safety and Health Administration (Non-Mandatory Form) Form Approved
OMB No. 1218-0072



- Annual or shorter tedoxettown		CIMB,NO. 12	10-0072		
IDENTITY (AS Used on Label and List) COLD COL	ΛT	Note: Blank sp informati	paces are not permitted. ion is available, the space	If any item is not app must be marked to	incicate that
Se Al					•
Manufacturer's Name		Emergency Te	lephone Number	•	
SPECTROWAX		Telephone Nu	mber for information	<del></del>	<del></del>
Address (Number, Street, City, State, and ZIP Code)		Teleprone No	254-2800		•
70 HICHBORN STREET		Date Prepared	1		<del></del>
BRIGHTON MA 02135		·	WVX 1389	<del></del>	
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Section II — Hazardous Ingredients/Identity	/ Information	n		•	
Hazardous Components (Specific Chemical Identity; Corr	mon Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
DIETHYLENE GLYCOL MONOMETHY		NONE	ESTABLISHED		5
CAS# 111-77-3				. :	
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			· · · · · · · · · · · · · · · · · · ·	•	<del></del>
			<del></del>	<del></del>	
		<del></del>	<del>,</del>		
	<del></del>				<del></del>
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4		<del></del>	<u></u>	<del></del>	······································
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	,	e. e. e.			<u> </u>
er a to existing parties of					
		* 1			,
Section III — Physical/Chemical Characteris	itics		<del></del>	•	
Boiling Point	- 212F	Specific Gravit	y (H ₂ O = 1)	1	1.02
Vapor Pressure (mm Hg.)	WATER	Melting Point			
spor Density (AIR = 1)		Evaporation R			WATER
Aubility in Water	WATER	(Bulyl Acetale	• 1)		
COMPLETE				<u> </u>	- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Spearance and Odor MILKY BROWN SOLUT	rion; mi	LD ODOR			
Section IV — Fire and Explosion Hazard Da	ata				• , 1
Flash Point (Method Used) NONE	•	Flammable Lic	nila N/A	LEL	UEL
Extinguishing Media		· *	· · · · · · · · · · · · · · · · · · ·		
Special Fire Fighting Procedures	· · · · · · · · · · · · · · · · · · ·	· <del>··</del> ··	· · · · · · · · · · · · · · · · · · ·	<u> </u>	-
· N/A	• -			1	Hein!
manus a manuspanting are arming			• •	•	, man ,
Justial Fire and Explosion Hazards N/A				···	
Elder were of course to busy and				·	0908-2029
leproduce locally)		•	· · · · · · · · · · · · · · · · · · ·	OSHA	174, Sept. 1985

эшому	Unstable	Conditions t	o Avoid N/I	1				
Hein.	Stable	x	<del></del>	<del></del>	<del></del> _	•		
Incompatibility (	Materials to Avoid)							
Hazardoùs Decon	sposition or Byprodu	N/A						
Hazardous	May Occur	Conditions t					<del></del>	
Polymerization	Will Not Occur .	x	N/	<u>/A</u>			<del></del>	
Section VI -	Health Hazard	Data	· ·					
Route(s) of Entry:		lation? NO .		Skin? NO		Ingéstion?	NO	
Heath Hazards (	Acuse and Chronic)	N/A			•	•		-
e Megasa s	entere or grown in the	· .				<del></del>		rege <b>hav</b>
	under getreg : a					!		
Caronogenicity:	NTP	no No		IARC Monographs?	NO	OSHA Regu	NO NO	. !
ور فاعد دونها				1 -				
Signs and Symp	lams of Exposure	N/A	.					
Santa High	1 1 1	<u> </u>						,
Medical Condition Generally Aggran	ns rated by Exposure	N/A	į					-
1	to a transfer of the second	·	······································			t		
Emergency and	First Aid Procedures E	VPC- PTHEN	4.1 UPTW	PCR AMOUNT	PS OF WAY	IPR SRPK	MEDICAL.	
ASSISTAN	CE. SKIN-	WASH WELL	WITH SOA	P AND WATI	ER. IF I	NGESTED-I	NDUCE VO	<u>mit</u> ino
Section VII -	- Precautions f	or Safe Handlin	g and Use	<del>SBBK-IMMI</del>	HEN BYKIC	DICAL ATT	<del>BNTION.</del>	
Staps to Be Tak	en in Case Material	ls Released or Spille	d	FLUSH WITH	WATER,	MOP UP A	ND HOLD E	OR
<u> </u>		<del></del>		DISPOSAL	<del></del>			
•	)	<del></del>	·			• :		., L
Waste Disposal I	Method ANY M	ETHOD IN A	CCORDANC	E WITH API	PLICABLE	LAWS.		
•			, .				1 :	
Precautions to B	e Taken in Handling	and Storing KEE	P CONTAI	NER CLOSE	D WHEN N	or in use	. DO NO	r C
	T ELEVATED						·····	
Other Precaution	GLOVES	AND EYE P	ROTECTION	N RECOMMEN	ED			
	`				•			
	— Control Meas					•	·	<u></u>
Respiratory Prote	iction (Specify Type)	N/A	,				• •	
Ventilation	Local Exhaust	N/A		Special	<del></del>	<del></del>	•••	با و ا
· • • • • • • • • • • • • • • • • • • •	Mechanical (General	4)		Other	<del> </del>	• •	9.4.9	with the L
Protective Glove	RECOMME	NED		Eye Protection	RECOMM	IENED		
Other Protective	Clothing or Equipme	ent N/A	<del> </del>	<u> </u>			····	
WorkHygienic P		<del></del>	• .					
<del></del>	. N/7	<u> </u>	P	ige 2			LPG 1800-491-327	/-5/75

### WIRE PROCESSING — SPECIALIZING IN SUPERIOR COLD HEADING QUALITY WIRE 6440 E. CANNING ST., COMMERCE, CALIF. 90040 (213) 722-4933 (800) MGF-WIRE TELEX: 181444

### Material Safety Data Sheet O.S.H.A. Safety and Health Standards (29 C.F.R. 1900.1200 Rev. July 1, 1984)

Section I - - Material Identity

MANUFACTURERS NAME & ADRESS

AREA CODE & PHONE NO.

MGF Industries Corp. 6440 E. Canning Street Commerce, California 90040 (213)722-4933

NAME & TITLE OF INDIVIDUAL SUPPLYING INFORMATION

R.W. Johnson - Manager, Quality Control

PRODUCT NAME/TRADE NAME

Cold Drawn Carbon and Alloy Steel - Bars and wire Coil

CHEMICAL NAME & SYNONYMS

Alloy Steel Products - Example 8740

### Section II - Ingredients & Residual Substances

*C.A.S. NO.	ELEMENTS	WEIGHT PERCENTAGE	PERMISSIBLE EXPOSURE L	IMITS
			Contaminant	Units/Air Volume
1309-37-1	BASE METAL Iron	94.0 - 99.5	Iron Oxide Fumes	10mg/M³
7440-44-0 7439-96-5 7723-14-0 7704-34-9 7740-21-3 7740-02-0 7740-47-3	ALLOYS Carbon Manganese Phosphorus Sulfur Silicon Nickel Chromium	.0150 .25 - 1.70 .001040 .00113 .0135 .01 - 2.00 .01 - 1.10	Carbon Oxide Manganese Phosphorous (Yellow) Sulfur dioxide N/A Nickel Soluble Chromic/ Chromous Salts Chrome & Insoluble Salts	55mg/M ³ 5mg/M ³ .lmg/M ³ 13mg/M ³ 10mg/M ³ .5mg/M ³

### WIRE PROCESSING — SPECIALIZING IN SUPERIOR COLD HEADING QUALITY WIRE 6440 E. CANNING ST., COMMERCE, CALIF. 90040 (213) 722-4933 (800) MGF-WIRE TELEX: 181444

Material Safety Data Sheet November 25, 1985 Page 2

*C.A.S. NO.	ELEMENTS	% WGT	PERMISSIBLE EXPOSURE LIMITS	UNITS
	ALLOYS			
7439-98-7	Molybdenum	.0165	Soluble Moly.	5 /M3
			Components Insoluble Moly.	5mg/M³
			Components	$15 \text{mg/M}^3$
7440-6-22	Vanadium	.0135	Vanadium Pentoxide	•
			Dust	$.5 \text{mg/M}^3$
			Fume	.5mg/M³
1303-86-2	Boron	.0001003	Boron Oxide	lOmg/M³
7429-90-5	Aluminum	.0120	Aluminum Oxide	10mg/M ³
7440-70-2	Calcium	<.005-	Calcium Oxide	5mg/M ³
7782-447	Oxygen	<.005	N/A	N/A
7727-379	Nitrogen	.005016	N/A	N/A
7440-50-8	Copper	.0135	Fume	.2mg/M³
13463-67-7	Titanium	<.005	Titanium Dioxide	10mg/M ³
7440-67-2	Zirconium	<.005	N/A	5mg/M ³
7440-66-6	Zinc	<.005	Zinc Oxide	5mg/M ³
7440-31 <b>-</b> 5	Tin	<.005	Tin Oxide	10mg/M³
743-99-54	Magnesium	<.005	Magnesium Oxide	10mg/M ³
7440-33-7	Tungsten	<.005		lmg/M³
7440-43-9	Cadmium	<.005	Cadmium Oxide	

All carbon and alloy steel products consist primarily of iron, but may include elements added intentionally which are present as residuals in low concentrations of less than .5 percent. The above mentioned elements may appear and vary in percentage weight depending on steel grade or according to order specification.

### COATINGS

Surface coatings of petroleum oils, phosphate or dry lube (borax or lime) may be used as a rust inhibitor or lubricant.

*Chemical Abstract Society

WIRE PROCESSING — SPECIALIZING IN
SUPERIOR COLD HEADING QUALITY WIRE
6440 E. CANNING ST., COMMERCE, CALIF. 90040
(213) 722-4933 (800) MGF-WIRE TELEX: 181444

Material Safety Data Sheet November 25, 1985 Page 3

Section III - Physical Data

Boiling Point 2750 C (5000 F)
Vapor Pressure (mm Hg) - N/A
Vapor Density (Air=1) - N/A
Solubility in Water - N/A
Appearance -

Odor Physical State Specific Gravity (H O=1) - 7
Percent Volatile by Volume % -N/A
Evaporation Rate (Butg 1 Acetale=1) -N/A
Auto Ignition Temp. -N/A
Metallic luster, gray-black, non-oxide
reddish-brown
None
Solid

Section IV - Fire and Exposion Hazard Data

Flash Point - N/A (for steel) greater than 300 F (for oil coating)
Explosive Limits - upper N/A
lower N/A
Extinguishing Media - N/A
Special Fire Fighting Precautions - N/A

Section V - Health Hazard Data

Note:

Steel products in the natural state do not present an inhalation, ingestion or contact hazard. However operations such as burning, welding brazing, sawing or grinding may result in the following effects if exposure exceeds the permissible levels from those listed in Section II.

ROUTE OF ENTRY

Inhalation

Effects of Overexposure

Acute:

Iron (Iron Oxide) - Irritation of eyes, nose, throat,
 Metallic taste in mouth, or metal fume fever.

Manganese - Irritation of eyes, nose, throat, metallic taste in mouth, or metal, fume fever.

Chromium - Irritation of eyes, nose and lungs; dermatitis.

Nickel - Irritation of eyes, nose and lungs; dermatitis

# WIRE PROCESSING — SPECIALIZING IN SUPERIOR COLD HEADING QUALITY WIRE 6440 E. CANNING ST., COMMERCE, CALIF. 90040 (213) 722-4933 (800) MGF-WIRE TELEX: 181444

Material Safety Data Sheet November 25, 1985 Page 4

Molybdenum - Slight irritation of eyes, nose and throat.

Vanadium - Irritation to conjunctivae and respiratory tract (greenish-black discoloration of tongue and shortness of breath).

#### Chronic

Iron (Iron-oxide) - Pulmonary effects, siderosis

Manganese - Bronchitis, pneumonitis, inflammation and/or ulceration of upper respiratory tract, and possible cancer of masal passages and lungs.

Chromium - (Same as nickel)

Molybdenum - Pain in joints, hands, knees and feet

Vanadium - No reported cases of chronic effects due to overexposure to vanadium.

Emergency First Aid

Remove to fresh air, administer oxygen and seek medical attention.  $% \left( 1\right) =\left( 1\right) \left( 1\right) +\left( 1\right) \left( 1\right) \left( 1\right) +\left( 1\right) \left( 1\right$ 

Skin

Effects of Overexposure

Prolonged skin contact may cause reddening and drying of skin or possibly dermatitis from nickel/chromium content and/or surface coating such as oil, phosphate, lime, etc.

Emergency First Aid

Wash effected areas with soap and water and seek medical attention immediately.

WIRE PROCESSING — SPECIALIZING IN

SUPERIOR COLD HEADING QUALITY WIRE

6440 E. CANNING ST., COMMERCE, CALIF. 90040

(213) 722-4933 (800) MGF-WIRE TELEX: 181444

Material Safety Data Sheet November 25, 1985 Page 5

#### Section VI - Reactivity Data

Stability - Stable - Yes Unstable - No

Incompatibility (Materials to avoid) - Acids

Hazardous Products of Decomposition:

Metal Fumes: Iron oxide, chromium, nickel, lead,

manganese, molybdenum, vanadium pentoxide, zinc oxides and other noxious gases may be

produced during welding and buring

operations.

#### Section VII - Spill or Leak Procedures

Steps to be taken in case material is released or spilled-N/A. Waste Disposal - N/A.

#### Section VII - Special Protection Information

Respiratory Protection - N.I.O.S.H. approved dust/mist/fume respirator if O.S.H.A. permissible exposure limits are exceeded (Ref. Section II) and proper ventilation is not possible.

Other Protective Equipment - (ie., safety shoes, protective clothing, gloves, eye protection, ventilation requirements). Dependent upon processing of products, e.g. welding, grinding, burnging, cutting, brazing, etc. Consult various local, state and federal codes, standards, and guidelines, e.g. OSHA, ANSI, ASTM, AWS, etc.

#### Section IX - Special Precautions

Handling, Storage - The proper protective equipment should be used in handling and storage (See Section VII - Special Protection).

Welding and Cutting - Adequate ventilation and/or approved respiratory protection should be provided if permissible exposure limits are exceeded.

For additional information, see the American National Standard Safety in Welding and Cutting 249.1-1967 (American Welding Society Publication 249.1-1967).

CHEM-TREND INCORPORATED
1445 W. McPherson Park Dr.
P.O. Box 860
Howell, Michigan 48844-0860
Telephone (517) 546-4520
Telex: 229 455

January 16, 1992

SAFETY AND HEALTH DIRECTOR TRW FASTENERS 265 3RD STREET CAMBRIDGE, MASSACHUSETTS 02142 ATTN: RICHARD RUSSELL

In compliance with the OSHA Hazard Communication Standard, 29 CFR 1910.1200, the attached Material Safety Data Sheet(s) is/are being provided to you for the following product(s):

COME-CLEAN 900 (MSDS# 2149.8)

Our Material Safety Data Sheet(s) has/have been developed to meet the requirements of the OSHA Hazard Communication Standard.

If you have any questions regarding the Material Safety Data Sheet(s), please feel free to contact me at (517) 546-4520.

Very truly yours,

CHEM-TREND INCORPORATED

ANN FARMER

Regulatory Affairs Manager

Attachment(s)

## CHEM-TREND INCORPORATED MATERIAL SAFETY DATA SHEET EMERGENCY TELEPHONE NO. 517-546-4520

SECTION I

PRODUCT NAME OR NUMBER: COME-CLEAN 900

MANUFACTURER'S NAME: CHEM-TREND INCORPORATED

ADDRESS: 1445 McPherson Park Dr., P.O. Box 860, Howell, MI 48844-0860

PROPER SHIPPING NAME(49 CFR 172.101): Not regulated

HAZARD CLASS(49 CFR 172.101: Not regulated

HAZARD ID NUMBER: Not applicable

CHEMICAL FAMILY: Alkaline water base solution

SECTION II INGREDIENTS

Blend of surfactants, couplers, builders, dyes, conditioners

and water

95-99%

Sodium hydroxide

1-5% TLV*: 2mg/m3 (ceiling) (OSHA & ACGIH)

*TLV means Threshold Limit Value. " This refers to airborne concentrations of substances and represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse effect."

SECTION III TYPICAL PHYSICAL DATA NOT TO BE CONSIDERED SPECIFICATIONS

BOILING POINT (initial):

SPECIFIC GRAVITY:

VAPOR PRESSURE (mm Hg):

VAPOR DENSITY (air=1): EVAPORATION RATE (ether=1):

PERCENT VOLATILE BY WEIGHT:

SOLUBILITY IN WATER:

APPEARANCE AND ODOR:

pH:

approx. water

1.2

approx. water

approx. water

approx. 1 65-75

03-75

Complete

Concentrate - 12.5-13.0

5% dilution - 11.9-12.3

Clear pale yellow-green liquid; mild odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (method used): None

FLAMMABLE LIMITS IN AIR, % BY VOLUME: Not applicable

Lower(lel)

Upper(uel)

EXTINGUISHING MEDIA: Fire and heat may drive off water leaving chemical ingredients which may burn.

SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus when fire fighting in a confined space.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known

CONTAINER HANDLING: Do not cut or weld empty drums unless they are thoroughly cleaned.

MSDS NUMBER 2149.8

REVISED 02/06/91

CHEM-TREND INCORPORATED

PAGE 1

MONO-COAT, MONO-LUBE, RDP, RPM, SAFETY-LUBE and SAFETY-LUBE-SUPER are registered trademarks of CHEM-TREND INCORPORATED

#### SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: Not established for the product. See section II.

LISTED CARCINOGEN (NTP, IARC OR OSHA): This product does not contain any listed carcinogens.

ROUTES OF EXPOSURE AND ACUTE EFFECTS:

DANGER: CORROSIVE

Skin Contact:

The concentrate will irritate or burn skin after short contact due to high alkalinity. Dilutions of 1% in water

alone have alkalinity similar to hand soap, although the product is not intended for use as hand soap.

Eye Contact:

Concentrate will irritate or burn eye tissue. Dilutions will be irritating.

Inhalation:

The concentrate is not volatile, so no inhalation should be possible.

Ingestion:

Concentrate will be harmful if swallowed, because of its alkalinity. It will irritate or burn mucous membrane

CHRONIC EFFECTS:

A review of literature suggests no long term hazard. Because of the intermittent nature of use of the product,

exposure is very limited.

EMERGENCY AND FIRST AID PROCEDURES:

Skin Contact:

Concentrate - wash off with plain water. Dilution - wash with soap and water. Launder contacted clothing

before reuse.

Eye Contact:

Flush with water for at least 15 minutes. Contact physician.

Inhalation:

If throat is irritated by vapors, move to fresh air.

Ingestion:

If concentrate is swallowed, DO NOT induce vomiting. Give large quantities of water.

immediately. Never give anything by mouth to an unconscious person.

#### SECTION VI REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: Contact with strong acids; contact of concentrate with active metal fines such as aluminum.

INCOMPATIBILITY: Store away from strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Hydrocarbon decomposition products at elevated temperatures.

HAZARDOUS POLYMERIZATION: Will not occur CONDITIONS TO AVOID: None known

#### SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Small Spills: Soak up with absorbent material.

Large Spills: Dike area to prevent runoff, recover liquid, soak up remaining liquid with absorbent material

WASTE DISPOSAL METHOD: Dispose of in accordance with local, state and federal regulations

RCRA HAZARDOUS WASTE DESIGNATION: This product does fall under current EPA RCRA definitions of hazardous waste with designation D002 because of its alkalinity if the product is disposed of in its original form.

CERCLA (Superfund) REPORTABLE QUANTITY: This product does contain a CERCLA regulated material, sodium hydroxide, RQ=1000 LBS.

#### SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Good industrial hygiene practices recommend that engineering controls (such as local and/or mechanical ventilation) be used to reduce environmental concentrations to the permissible exposure level. Respirators may be used when engineering and work practice controls are not technically feasible, when such controls are in the process of being installed, or when they fail and need to be supplemented. If the use of a respirator is necessary use only a MSHA/NIOSH approved air supplied respirator or an air-purifying respirator.

PROTECTIVE GLOVES: Impervious gloves (such as rubber, neoprene, NBR nitrile, polyethylene) when handling the concentrate. EYE PROTECTION: Safety glasses with side shields or chemical goggles

OTHER PROTECTIVE EQUIPMENT: Appropriate clothing to avoid skin contact

MSDS NUMBER 2149.8

CHEM-TREND INCORPORATED

PAGE 2

Contact physician

REVISED 02/06/91

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TRW-00672

SECTION	١x	SPECIAL	PRECAUT	IONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep drums and containers of concentrate closed when not in use. Allow to warm to room temperature before dilution.

Do not add any other additive ingredients to the concentrate.

Do not use aluminum, magnesium, or zinc equipment with this product in the concentrated form.

OTHER PRECAUTIONS: None known

#### SECTION X OTHER HAZARD INFORMATION

The product is not considered corrosive according to D.O.T. regulations.

#### SECTION X1 ADDITIONAL REGULATORY INFORMATION

OCCUPATIONAL SAFETY And HEALTH ADMINISTRATION (OSHA)

29 CFR 1910.1200 Hazardous Chemical: Yes

SUPERFUND AMENDMENTS And REAUTHORIZATION ACT Of 1986 (SARA)

Section 302, Extremely Hazardous Substance: No

Section 311, Hazardous Chemical: Yes

Hazard categories: Fire - No, Reactivity - No, Sudden release of pressure - No, Immediate - Yes, Delayed - No Section 313, Toxic chemical: Yes - sodium hydroxide 1310-73-2 1-5%

TOXIC SUBSTANCE CONTROL ACT (TSCA)

TSCA Inventory: This product is a mixture and is not listed in the TSCA Inventory. The individual ingredients in the product are listed in the Inventory.

#### APPROVAL: MHB

#### DISCLAIMER

Information presented herein has been compiled from information provided to us by our suppliers and other sources considered to be dependable and is accurate and reliable to the best of our knowledge and belief but is not guaranteed to be so. Nothing herein is to be construed as recommending any practice or the use of any product in violation of any patent or in violation of any law or regulation. It is the users' responsibility to determine the suitability of any material for a specific purpose and to adopt such safety precautions as may be necessary. We make no warranty as to the results to be obtained in using any material and, since conditions of use are not under our control, we must necessarily disclaim all liability with respect to the use of any material supplied by us.

MSDS NUMBER 2149.8 REVISED 02/06/91 CHEM-TREND INCORPORATED

PAGE 3

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## **COME-CLEAN 900**

CLEANER



heavy-duty industrial cleaner

COME-CLEAN 900 (formerly COME CLEAN) is a heavy-duty, water-base liquid industrial cleaner that efficiently and economically removes industrial soils from metal substrates, concrete floors and other surfaces.

### **Description**

COME-CLEAN 900 provides excellent cleaning performance at various dilutions and its versatility enables users to consolidate the number of cleaners used in a plant. COME-CLEAN 900 contains no petroleum or chlorinated solvents, abrasives, or phosphates.

A letter designation may appear following COME-CLEAN 900. This indicates a custom-blended product. Information on this data sheet applies to all versions of COME-CLEAN 900.

### **Benefits**

- Non-flammable
- Contains non-nitrited rust inhibitor package
- Effective on a wide variety of substrates and soils
- Concentrated formula allows for economical-use dilutions
- Excellent rinsability
- Works in a wide variety of water temperatures
- Easily diluted and mixed
- USDA approved for cleaning utensils and equipment

## **Applications**

COME-CLEAN 900 is especially effective in steam cleaning equipment, but it can also be used in soak tank systems, manual operations (mop, brush, hand sprayer, etc.) and industrial scrubbers. In addition, COME-CLEAN 900 is recommended for the flushing and cleaning of machine tools prior to charging with new coolant.

## **Dilutions**

OPERATION
Steam cleaning
Soak tank cleaning
Manual cleaning
(mop, brush, etc.)
Industrial scrubber
Machine tool sumps

DILUTION

8 - 10% (by volume) 10 - 12% (by volume)

1 - 5% (by volume)

5 - 8% (by volume)

3 - 5% (by volume)

(OVER)

#### TRW-00674



1445 W. McPherson Park Drive • P.O. Box 860 • Howell, MI 48844-0860 Telephone (517) 546-4520 • Toll Free Number: 800-248-4056 • Michigan Toll Free 800-292-8236

## COME-CLEAN 900

**CLEANER** 

heavy-duty industrial cleaner



Typical Properties Appearance Odor Density (lbs/gal; kg/l) pH (5% dilution) Solubility in water

Flash point Freezing point Clear, pale yellow liquid Detergent 9.2; 1.10 11.8 - 12.3 Complete None 30°F

Do not use aluminum, magnesium or zinc equipment for handling or storing this product.

Avoid concentrate contact with skin, eyes and clothing. Wear goggles and protective clothing. In case of contact, immediately flush skin and/or eyes with abundance of water. Consult physician for eye contact.

**Handling** 

This material is not classified as toxic by oral administration. Toxicity tests were conducted in accordance with techniques specified in the Regulations for the Enforcement of the Federal Hazardous Substance Act (16 CFR 1500).

We believe COME-CLEAN 900 has a low degree of hazard when used as intended. For complete information on health and safety hazards, request a copy of Chem-Trend's Material Safety Data Sheet.

Foremost consideration is given to environmental and worker safety in the formulation of all Chem-Trend products.

**Packaging** 

COME-CLEAN 900 is available in 1-gallon cans, 5-gallon pails, 55-gallon drums and bulk quantities.

Data may vary slightly due to minor formulation changes.

For further information on special applications or other Chem-Trend products, write or call your Chem-Trend distributor or representative.

C-101 1007



TRW-00675



1445 W. McPherson Park Drive • P.O. Box 860 • Howell, MI 48844-0860 Telephone (517) 546-4520 • Toll Free Number: 800-248-4056 • Michigan Toll Free 800-292-8236

#### MATERIAL SAFETY DATA SHEET

	SECT IO	N I NAME AND	PRODUCT				
MNUFACTURER'S NAME:			NTACT: D. St. Pie	 rre			
ADDRESS (STREET, CITY,	EMI	EMERGENCY TELEPHONE NO. (614) 438-2205					
TRADE NAME, COMMON NAME COMPAX & tool blanks. 5	intered polycrystalline		cemented	tungsten		PROVED BY P	
<u>Carbide substrate with</u> CHEMICAL FAMILY OR PROD			· · · · · · · · · · · · · · · · · · ·				
	SECT I	ON II COMPOS	ITION				
CHENICAL NAME	COMMON NAME	REG"	CAS	I DSHA		•	CARC IN-
		(Y/N) L	<b>*</b>	I PERMISSI I Exposure li	-	TLV	OGEN" (Y/N
Carbon (C) Tungsten carbide (limit	Diamond	N   N					N
Copalt (Co)		) Y		0.1 mg/cu M		5 mg/cu H   -1 mg/cuH	
Materials are regulate	i ed by OSHA 29 CFR 1910.	1200 Hazard Co		n Standard.		İİ	
	SECTION III PH	YSICAL AND CH	ENICAL DAT				
BOILING POINT: N/A VAPOR PRESSURE: N/A EVAPORATION RATE: N/A SOLUBILITY IN OTHER SOLU	SOLUBILITY IN	TILE BY VOL.: Y <u>WATER: Inso</u>  APPEAR/ id	luble ANCE AND O	ile VAPOR DI SOLUBIL DOR:	ENS I	AVITY: N/A TY: N/A I <u>N_ALCOHOL:</u>	
FLASH POINT: NAIF	(METHOD USED)	N/A	F	LAMMABLE LIMI	rs: i	LEL: N/A U	EL: N/A
EXTINGUISHING HEDIA:	IAIF						##======
SPECIAL FIRE FIGHTING PI	OCEDURES: None	. #					~~~~~~
EXPLOSION POTENTIAL: NO	)ne		* * * * * * * * * * * * * * *				
~~~~~~~~~~	SECTION V HEALTH,	FIRST AID A	ND HEDICAL	DATA			
	ACUTE AND CHRONIC HEALT AND EFFECTS OF OVEREXPO			FIRST A		AND FORMATION	_~~~~~
	Dust from grinding can	cause nose ar		rri- Remove	from	exposure;	seek
	tation. Potential for conent respiratory diseasedust).				l ati	tention.	
INGESTION:	No information available have occurred in the turn it has been suggested that for causing blood,	i <mark>ngsten carbi</mark> c hat cobalt ha	de industry as the pota	n- ingeste	ed, d of w	ial quantit; dilute with water, indus medical att	a large ce vomit-
SKIN CONTACT &	Can cause irritation or	allergic ski		Wash wi	th s	soap and wat	ter;
	to cobalt sensitization Can cause irritation.			Flush e	yes	<u>al attention</u> with water tention.	seek
OTHER POTENTIAL HEALTH RISKS:	NAIF			; ; T-mad1291		: <u> </u>	
Trademark of General El	ectric Co., U.S.A.	.,			-	TRW-006	 676

TRW-00676

·	SECTION AT CORROSIATION MAD REMOTIATION DATA
	STABLE () STABLE (X) POLYMERIZATION: MAY OCCUR () WILL NOT OCCUR (X)
DECOMPOSITION I	PRODUCTS: NAIF
CONDITIONS TO	RE AVOIDED:
1	SECTION VII STORAGE, HANDLING AND USE PROCEDURES
	AND HANDLING: Handle with adequate ventilation for nuisance dust. See OSHA 29CFR 1910.94 and 29CFR 1910.1000 (Air Contaminants).
	ndle with adequate ventilation for nuisance dust. See OSHA 29CFR 1910.94 (Ventilation) 1000 (Air Contaminants).
STEPS TO BE TAN	(EN IN CASE OF LEAKS OR SPILLS: Sweep up and dispose inert solid.
WASTE DISPOSAL	METHOD: Normal cleanup procedures.
	SECTION VIII PERSONAL PROTECTION INFORMATION
RESPIRATORY PRO	TECTION (SPECIFY TYPE):
VENTILATION	LOCAL: Yes
l Yes	MECHANICAL: Yes (GENERAL)
	OTHER: None
ווו ליידותם	/ES: Protective gloves are recommended when contact with dust or mist is likely.
EYE PROTECTION:	When operating grinding, cutting or drilling equipment.
OTHER EQUIPMENT	
MEASURES TO BE WITH THIS MATES 	TAKEN DURING REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT THAT HAS BEEN IN CONTACT PLACE NAIF
	SECTION IX SPECIAL PRECAUTIONS
PRECAUTIONS TO	BE TAKEN IN HANDLING AND STORAGE: None
OTHER PRECAUTION	NS: Adequate exhaust
1	NOTE:
expected in gri gate or solid i metal working i eye glasses, ar The cobalt cont commercial grad	General Electric we know of no hazards related to our product beyond those that might be inding any material. The product contains diamond, tungsten carbide and cobalt in aggretorm. Grinding sintered tungsten carbide/cobalt tooling has been well established in the industry for more than 50 years. The precautions used comprise of safety shields, safety ad good ventilation with well-placed air intakes near the source of the grinding dust. Lent of the diamond table is less than 10% by weight. The tungsten carbide is standard le and contains about 13% cobalt by weight. The cobalt involved here is solid and shoul tional hazards as long as local exhaust ventilation is provided.

** MAIF = NO APPLICABLE INFORMATION FOUND

AAA N/A = NOT APPLICABLE

0908-2043

Page 1

MATERIAL SAFETY DATA SHEET

COOK'S INDUSTRIAL LUBRICANTS 5 NORTH STILES STREET LINDEN, N. J. 07036

REVISION DATE 23-NOV-92

DATE ISSUED 25-NOU-92

IDENTIFICATION AND EMERGENCY INFORMATION

COOK'S PRODUCT NAME:

DRAW 5519

COOK'S PRODUCT #:

J5P541G

CHEMICAL NAME:

Petroleum-based E.P. Drawing Oil

CAS #'S:

Mixture

PRODUCT APPEARANCE AND ODOR:

Amber liquid, petroleum odor

CHEMICAL FAMILY:

Petroleum hudrocarbon

SYNONYMS:

Drawing oil

EMERGENCY TELEPHONE:

(201) 862-2500

COMPONENTS AND HAZARD INFORMATION

COMPONENTS:

W/W

HAZARD DATA (TLV, LD50, LC50, ETC.):

Petroleum-based lubricating oil

CAS #'S

64742-53-6 or

64742-52-5

TLU 5 mg. /meter cubed

(as an oil mist)

Chlorinated Paraffin

CAS # 61788-76-9

n/e

Epoxidized Soubean Oil

CAS # 8013-07-8

n/e

Triglyceride

CAS # 8016-28-2

n/e

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS):

Health

Flammability 1

Reactivity

1

Ø

TRANSPORTATION INFORMATION

TRANSPORTATION INCIDENT INFORMATION:

ICC: Compound or lubricant. Metal cutting, drawing or drilling.

Dry, liquid or paste. NOI

EMERGENCY FIRST AID

EYE CONTACT:

If splashed into the eyes, flush with clear water for 15 minutes or until irritation subsides. If irritation persists, call a physician.

EMERGENCY FIRST AID

SKIN CONTACT:

In case of skin contact, remove contaminated clothing and wash skin thoroughly with soap and water.

INHALATION:

Vapor pressure is very low. Vapor inhalation under ambient conditions is normally not a problem. If overcome by vapor from hot product, immediately remove from exposure and call a physician. If breathing is irregular or has stopped, start resuscitation; administer oxygen if available. If overexposure to oil mist, remove from further exposure until excessive oil mist condition subsides.

INGESTION:

If ingested, do not induce vomiting. Call a physician immediately.

FIRE AND EXPLOSION HAZARD INFORMATION

FLASH POINT (MINIMUM):

AUTOIGNITION TEMPERATURE:

160°C (320°F) Test method: COC

N/E

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) - HAZARD IDENTIFICATION:

Health

Flammability

Reactivity

eartn 1

1

0

FLAMMABLE OR EXPLOSIVE LIMITS (approximate percent by volume in air): Estimated values: lower 1% upper 6%

EXTINGUISHING MEDIA AND FIRE FIGHTING PROCEDURES:

Foam, water spray (fog), dry chemical, carbon dioxide and vaporizing liquid type extinguishing agents may all be suitable for extinguishing fires involving this type product, depending on size or potential size of fire and circumstance related to the situation. Plan fire protection and response strategy through consultation with local fire protection authorities or appropriate specialists.

The following procedures for this type of product are based on the recommendations in the National Fire Protection Association's "Fire Protection Guide on Hazardous Materials", Eighth Edition (1984):

Use water spray, dry chemical, foam, or carbon dioxide. Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water froth may be used to flush spills away from exposure. Minimize breathing gases, vapor, fumes, or decomposition products. Use supplied-air breathing equipment for enclosed or confined spaces or as otherwise needed.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

TRW-00679

"EMPTY" CONTAINER WARNING:

Empty containers retain residue (liquid or vapor) and can be dangerous. DO NOT PRESSURIZE, WELD, CUT BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged, and returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with

FIRE AND EXPLOSION HAZARD INFORMATION

government regulations. For work on tanks refer to Occupational Safety and Health Administration regulations, ANSI Z49.1, and other governmental and industrial references pertaining to cleaning, repairing, welding, or other contemplated operations.

HEALTH AND HAZARD INFORMATION

EXPOSURE LIMIT FOR TOTAL PRODUCT:

5 mg/cubic meter for oil mist in air

BASIS:

OSHA Regulation 29 CFR 1910, 1000

VARIABILITY AMONG INDIVIDUALS:

Health studies have shown that many petroleum hydrocarbons and synthetic lubricants pose potential human health risks which vary from person to person. As a precaution, exposure to liquids, vapors, mists, or fumes should be minimized.

EFFECTS OF OVEREXPOSURE (Signs and symptoms of exposure):

Prolonged or repeated skin contact with this product tends to remove skin oils possibly leading to irritation and dermatitis; however, based on human experience and available toxicological data, this product is judged to be neither a "corrosive" nor an "irritant" by OSHA criteria. Product contacting the eye may cause irritation.

Product has a low order of oral and dermal toxicity. Possible aspiration hazard. Induced vomiting may cause aspiration of product into the lungs. (See Emergency First Aid Section).

PHYSICAL DATA

The following data are approximate or typical values and should not be used for precise design purposes.

BOILING RANGE:

Wide range

VAPOR PRESSURE:

< 0.1 @ 38'C/100'F

SPECIFIC GRAVITY (25'C/25'C):

(WATER = 1)

< 1.0

UAPOR DENSITY (AIR = 1):

> 8

MOLECULAR WEIGHT:

Wide range

PERCENT VOLATILE BY VOLUME:

Negligible

EVAPORATION RATE @ 1 ATM. AND 25'C

(77'F) (n-BUTYL ACETATE = 1):

< 1.0

SOLUBILITY IN WATER @ 1 ATM. and 25°C くプフ^トFン:

Negligible

POUR, CONGEALING OR MELTING POINT:

n/e

FREEZING POINT:

n/e

REACTIVITY

This product is stable and will NOT react violently with water. Avoid contact with strong oxidants such as polymerization will not occur. liquid chlorine, concentrated oxygen, sodium hypochlorite or calcium

REACTIVITY

hypochlorite.

DECOMPOSITION PRODUCTS UNDER FIRE CONDITIONS:

Fumes, smoke, carbon monoxide, hydrogen chloride and other decomposition products in case of incomplete combustion.

CONDITIONS TO AVOID:

Open flames.

TOXICITY

ORAL (Acute)

LD 50 > 5 g/kg (total body weight)

DERMAL (Acute)

LD 50 > 3.16 g/kg (total body weight) N/E

EYE

NZE

INHALATION (Acute)
CHRONIC, SUBCHRONIC, ETC.

NZE

Medical Conditions Aggravated by Exposure:

Unknown

This product does NOT contain any ingredients identified as carcinogenic by IRAC, NTP, or OSHA.

Chlorinated paraffins are a class of compounds that are similarly manufactured but which vary in molecular structure by carbon chain length and degree of chlorination. The chlorinated paraffin contained in this product has not been shown to have adverse health effects. While tests have been conducted by the National Toxicology Program on other specific chlorinated paraffins, the relevance of these studies to the chlorinated paraffin contained in this product, if any, has not been determined.

SARA Section 313 Status:

This material is not known to contain any chemicals on the SARA Section 313 list at a concentration greater than 1.0 percent or carcinogenic chemical on that list at a concentration greater than 0.1 percent.

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Keep product out of sewers and watercourses by diking or impounding. Absorb with sand or inert material. Sweep or scoop up and remove. Prevent spread of spill. Advise authorities if product has entered or may enter sewers, watercourses or extensive land areas. Assure conformity with local regulations.

WASTE DISPOSAL METHOD: (Consult federal, state, or local authorities for proper disposal procedures.)

Assure conformity with applicable disposal regulations. Dispose of absorbed material at an approved waste site or facility.

PROTECTION AND PRECAUTIONS

VENTILATION: (Always maintain below permissible exposure limits.)
Use local exhaust to capture vapor, mist or fumes, if necessary. Provide

PROTECTION AND PRECAUTIONS

greater than 60 feet per minute hood face velocity for confined spaces. Provide ventilation sufficient to prevent exceeding recommended exposure limit or buildup of explosive concentrations of vapor in air.

RESPIRATORY PROTECTION: (Use only NIOSH approved equipment.)
Normally not needed at ambient temperatures. Use supplied air respiratory
protection in confined or enclosed spaces, if needed. Use filter, dust, fume,
or mist respirator type under misting conditions. Use can or cartridge; gas
or vapor respirator type under conditions exceeding TWA standard.

PROTECTIVE GLOVES:

Use chemical-resistant gloves, if needed, to avoid prolonged or repeated skin contact.

EYE PROTECTION:

Use splash goggles or face shield when eye contact may occur.

OTHER PROTECTIVE EQUIPMENT:

Use chemical-resistant apron or other impervious clothing, if needed, to avoid contaminating regular clothing which could result in prolonged or repeated skin contact.

WORK PRACTICES/ENGINEERING CONTROLS:

Keep containers closed when not in use. Do not handle near heat, sparks, flame, or strong oxidants.

PERSONAL HYGIENE:

Minimize breathing vapor, mist, or fumes. Avoid prolonged or repeated contact with skin. Remove contaminated clothing; launder or dry-clean before reuse. Remove contaminated shoes and thoroughly clean before reuse; discard if oil-soaked. Cleanse skin thoroughly after contact, before breaks and meals, and at end of work period. Product is readily removed from skin by waterless hand cleaners followed by washing thoroughly with soap and water.

PREPARED BY:	PETER KONOPI	MANAGER OF QUALITY ASSURANCE

THE ABOUE INFORMATION IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, SINCE DATA, SAFETY STANDARDS, AND GOVERNMENT REGULATIONS ARE SUBJECT TO CHANGE AND THE CONDITIONS OF HANDLING AND USE, OR MISUSE ARE BEYOND OUR CONTROL, SELLER MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. USER SHOULD SATISFY HIMSELF THAT HE HAS ALL CURRENT DATA RELEVANT TO HIS PARTICULAR USE.

MATERIAL SAFETY DATA SHEET

COOK'S INDUSTRIAL LUBRICANTS 5 NORTH STILES STREET "LINDEN, ---N. J. - 07036

REVISION DATE 13-JUL-89

DATE ISSUED 05-MAR-90

IDENTIFICATION AND EMERGENCY INFORMATION

COOK'S PRODUCT NAME:

COOK'S PRODUCT #:

Cook Draw 4625

J5P701G

CHEMICAL NAME:

Petroleum-based E. P. Drawing Oil

CAS #'S: Mixture

PRODUCT APPEARANCE AND ODOR:

CHEMICAL FAMILY:

Petroleum hydrocarbon

Amber liquid, petroleum odor

EMERGENCY TELEPHONE:

Petroleum-based lubricating oil

(201) - 662-2500

COMPONENTS AND HAZARD INFORMATION

COMPONENTS:

SYNONYMS:

HAZARD DATA (TLU, LD50, LC50, ETC.): U/U

etroleum-based lubricating oil

JAS #'S

64742-53-6 or

TLU 5 mg/meter cubed

(as an oil mist)

Chlorinated Paraffin

n/e

CAS #'s

68920-70-7

64742-52-5

Proprietary additives

n/e

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS):

Health

Flammability

Reactivitu

Basis

2

1

1

TRANSPORTATION INFORMATION

TRANSPORTATION INCIDENT INFORMATION:

Compound or lubricant. Metal cutting, drawing or drilling.

Dry, liquid or paste. NOI

EMERGENCY FIRST AID

EYE CONTACT:

If splashed into the eyes, flush with clear water for 15 minutes or until irritation subsides. If irritation persists, call a physician.

SKIN CONTACT:

n case of skin contact, remove contaminated clothing and wash skin thoroughly with soap and water.

EMERGENCY FIRST AID

NHALATION:

Vapor pressure is very low. Vapor inhalation under ambient conditions is normally not a problem. If overcome by vapor from hot product, immediately remove from exposure and call a physician. If breathing is irregular or has stopped, start resuscitation; administer oxygen if available. If overexposure to oil mist, remove from further exposure until excessive oil mist condition subsides.

INGESTION:

If ingested, do not induce vomiting. Call a physician immediately.

FIRE AND EXPLOSION HAZARD INFORMATION

FLASH POINT (MINIMUM):

AUTOIGNITION TEMPERATURE:

NZE

160'C (320'F) Test method: COC

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) - HAZARD IDENTIFICATION:

Health Flammability Reactivity Basis

1 0 Recommended by Exxon

FLAMMABLE OR EXPLOSIVE LIMITS (approximate percent by volume in air):

Estimated values: lower 1% upper 6%

EXTINGUISHING MEDIA AND FIRE FIGHTING PROCEDURES:

Foam, water spray (fog), dry chemical, carbon dioxide and vaporizing liquid ype extinguishing agents may all be suitable for extinguishing fires involving this type product, depending on size or potential size of fire and circumstances related to the situation. Plan fire protection and response strategy through consultation with local fire protection authorities or appropriate specialists.

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UNUSUAL FIRE AND EXPLOSION HAZARDS:

"EMPTY" CONTAINER WARNING:

Empty containers retain residue (liquid or vapor) and can be dangerous. DO NOT PRESSURIZE, WELD, CUT BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged, and returned to a drum reconditioner. All other containers should be 'isposed of in an environmentally safe manner and in accordance with yovernment regulations. For work on tanks refer to Occupational Safety and Health Administration regulations, ANSI 249.1, and other governmental and industrial references pertaining to cleaning, repairing, welding, or other contemplated operations.

FIRE AND EXPLOSION HAZARD INFORMATION

HEALTH AND HAZARD INFORMATION

EXPOSURE LIMIT FOR TOTAL PRODUCT:

BASIS:

5 mg/cubic meter for oil mist in air

OSHA Regulation 29 CFR 1910.1000

VARIABILITY AMONG INDIVIDUALS:

Health studies have shown that many petroleum hydrocarbons and synthetic lubricants pose potential human health risks which vary from person to person. As a precaution, exposure to liquids, vapors, mists, or fumes should be minimized.

EFFECTS OF OVEREXPOSURE (Signs and symptoms of exposure): Prolonged or repeated skin contact with this product tends to remove skin oils possibly leading to irritation and dermatitis; however, based on human experience and available toxicological data, this product is judged to be neither a "corrosive" nor an "irritant" by OSHA criteria. Product contacting the eye may cause irritation.

Product has a low order of oral and dermal toxicity. Possible aspiration hazard. Induced vomiting may cause aspiration of product into the lungs. (See Emergency First Aid Section).

PHYSICAL DATA

The following data are approximate or typical values and should not be used for precise design purposes.

BOILING RANGE:

VAPOR PRESSURE:

Wide range

< 0.1 @ 38'C/100'F

SPECIFIC GRAVITY (25°C/25°C):

UAPOR DENSITY (AIR = 1):

(WATER = 1)

Wide range

> 8

CWATER =
C 1.0

MOLECULAR WEIGHT:

PERCENT VOLATILE BY VOLUME:

Negligible

EVAPORATION RATE @ 1 ATM. AND 25'C

SOLUBILITY IN WATER @ 1 ATM. and 25°C

(77'F) (n-BUTYL ACETATE = 1):

(77°F):

< 1. 0

Negligible

POUR, CONGEALING OR MELTING POINT:

FREEZING POINT:

n/e

n∕e

REACTIVITY

This product is stable and will NOT react violently with water. Hazardous polymerization will not occur. Avoid contact with strong oxidants such as liquid chlorine, concentrated oxygen, sodium hypochlorite or calcium hypochlorite.

ECOMPOSITION PRODUCTS UNDER FIRE CONDITIONS:

Fumes, smoke, carbon monoxide, hydrogen chloride and other decomposition

REACTIVITY

rroducts in case of incomplete combustion.

CONDITIONS TO AVOID:

Open flames.

TOXICITY						
ORAL (Acute)	LD 50 > 5 g/kg (total body weight)					
DERMAL (Acute)	LD 50 > 3.16 g/kg (total body weight)					
EYE	N/E					
INHALATION (Acute)	N/E					
CHRONIC, SUBCHRONIC, ETC.	N/E					

Medical Conditions Aggravated by Exposure: Unknown

This product does NOT contain any ingredients identified as carcinogenic by IRAC, NTP, or OSHA.

Chlorinated paraffins are a class of compounds that are similarly manufactured but which vary in molecular structure by carbon chain length and degree of chlorination. The chlorinated paraffin contained in this product has not been shown to have adverse health effects. While tests have been conducted by the National Toxicology Program on other specific chlorinated paraffins, the relevance of these studies to the chlorinated paraffin contained in this product, if any, has not been determined.

ARA Section 313 Status:

This material is not known to contain any chemicals on the SARA Section 313 list at a concentration greater than 1.0 percent or carcinogenic chemical on that list at a concentration greater than 0.1 percent.

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Keep product out of sewers and watercourses by diking or impounding. Absorb
with sand or inert material. Sweep or scoop up and remove. Prevent spread
of spill. Advise authorities if product has entered or may enter sewers,
watercourses or extensive land areas. Assure conformity with local regulations.

WASTE DISPOSAL METHOD: (Consult federal, state, or local authorities for proper disposal procedures.)
Assure conformity with applicable disposal regulations. Dispose of absorbed material at an approved waste site or facility.

PROTECTION AND PRECAUTIONS

VENTILATION: (Always maintain below permissible exposure limits.)
Use local exhaust to capture vapor, mist or fumes, if necessary. Provide greater than 60 feet per minute hood face velocity for confined spaces.
Provide ventilation sufficient to prevent exceeding recommended exposure imit or buildup of explosive concentrations of vapor in air.

PROTECTION AND PRECAUTIONS

PESPIRATORY PROTECTION: (Use only NIOSH approved equipment.) ormally not needed at ambient temperatures. Use supplied air respiratory protection in confined or enclosed spaces, if needed. Use filter, dust, fume, or mist respirator type under misting conditions. Use can or cartridge; gas or vapor respirator type under conditions exceeding TWA standard.

PROTECTIVE GLOVES:

Use chemical-resistant gloves, if needed, to avoid prolonged or repeated skin contact.

EYE PROTECTION:

Use splash goggles or face shield when eye contact may occur.

OTHER PROTECTIVE EQUIPMENT:

Use chemical-resistant apron or other impervious clothing, if needed, to avoid contaminating regular clothing which could result in prolonged or repeated skin contact.

WORK PRACTICES/ENGINEERING CONTROLS:

Keep containers closed when not in use. Do not handle near heat, sparks, flame, or strong oxidants.

PERSONAL HYGIENE:

Minimize breathing vapor, mist, or fumes. Avoid prolonged or repeated contact with skin. Remove contaminated clothing; launder or dry-clean before reuse. Remove contaminated shoes and thoroughly clean before reuse; discard if oil-oaked. Cleanse skin thoroughly after contact, before breaks and meals, and at end of work period. Product is readily removed from skin by waterless hand cleaners followed by washing thoroughly with soap and water.

PREPARED	BY:	Dave	Townsend	Product	Safety	Manager
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THE ABOVE INFORMATION IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, SINCE DATA, SAFETY STANDARDS, AND GOVERNMENT REGULATIONS ARE SUBJECT TO CHANGE AND THE CONDITIONS OF HANDLING AND USE, OR MISUSE ARE BEYOND OUR CONTROL, SELLER MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. USER SHOULD SATISFY HIMSELF THAT HE HAS ALL CURRENT DATA RELEVANT TO HIS PARTICULAR USE.





COOK DRAH #625

Transparent, Light Viscosity, Chlorine, Fatty Stamping Oil

DESCRIPTION

Cook Draw 4625 is a clear, light yellow product expressly designed with lowered surface tension and lowered viscosity to eliminate any pick-up of the work piece by the die in high speed stamping operations. A high percentage of natural fats in the finished product, together with a carefully selected light viscosity petroleum base oil assures both extra lubricity and metal metting and penetrating ability. It is also highly compounded with chlorine to supply the extreme pressure property to the oil film for effective protection of work and die against scoring and abrading. Cook Draw 4625 will permit uniform, high speed production and long die life. It is nonstaining and may be used in forming any metal.

APPLICATION

Cook Draw 4625 is generally applied by gravity feed to pad or wiper in contact with strip carbon steels. It is particularly adaptable to high speed stamping and blanking operations. The light oil film left on formed parts may be removed by conventional vapor degreasing, cold degreasing or hot alkaline wash.

PROPERTIES

Constitution ADT O JAE	13. 1
Gravity, API @ 60F	
Density, lbs/gal @ 60F	8. 15
Viscosity, SSU @ 100F	150
Color, ASTM	2-1/2
Flash Point, F	35 0
Chlorine, % wt.	9. 2
Saponification No.	2 9. <i>7</i>

™W-00688

0908-2054

COOK'S INDUSTRIAL LUBRICANTS 5 North Stiles Street P.O. Box 87 Linden, N.J. 07036 Telephone: (201) 862-2500

Tux: 710-996-5915 Fax: (800) 446-5888

05-MAR-90

TRW FASTENERS DIV 195 BINNEY ST ATTN: DICK RUSSEL PLANT MGR CAMBRIDGE MA 021420000

To Whom It May Concern:

As you requested, attached is a copy of a Material Safety Data Sheet covering CDRAW4625D

Title III of the Superfund Amendments and Reauthorizations Acts (SARA) requires chemical suppliers of mixtures and trade name products to provide information to their customers sufficient for them to comply with the requirements of Section 313.

Cook's has updated our Material Safety Data Sheets (MSDS's) to include the section 313 information and is distributing to all customers the revised MSDS's with shipment of product in 1989.

If you need any further information, please call.

Very Truly Yours,

David L. Townsend Product Safety Manager

DOT: COMBUSTIBLE LIQUID, N.O.S. NA1993 ENVIRONMENTAL ENGINEERING Boiling Point/Range Wide Range Freezing Point Wide Range Freezing Point Wide Range Freezing Point Wide Range Freezing Point Wide Range Freezing Point Wide Range Freezing Point Wide Range Freezing Point Wide Range Freezing Point Wide Range Freezing Point Wide Range Freezing Point Water Freezing Point Water Freezing Point Water Freezing Point Water Freezing Point Freezing Point Water Freezing Point Freezing Point Water Freezing Point Freezing P		TIAMA		. SAFETY DA LLY SIMILAR" TO OSHA 84)		EET	ADDRESS: Pennwalt Corp Cook's Industria 5 North Stiles S	1 Lubric	ants
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Syspenymi Chemical Family Petroleum hydrocarbon	NTIFICAT	•					Business: 201-8	62-2500	
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Syspenymi Chemical Family Petroleum hydrocarbon	E	parafi	fins.	CAS No.(s)					
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an approved waste disposal site or facility.						ulation	s. Dispose of abs	orbed ma	aterial a

	Oral (acute)				
		NE.			
•	Dermal (acute)				
		NE			·
	Eye			inhalation (acute)	
		NE	·	NE	**************************************
	Chronic, Subchronic, etc				
E		2000			
3		NE			
TOXICTY					
•					
	·				
	DEDMISSIRI E EXPOSI	JRE-LIMIT (Specify if TL)	//TWA or Celling (cl.)		, Other:
10	ACGIH 19		OSHA 19	NE	Mfg. Recommd.
1	IRRITATION	NE Suite	<u> </u>	Moderate	200 ppm TWA (solvent)
1		Skin V Eye	Severe	Moderate	Mild (translent)
3 I E	CORROSIVITY	Skin	4 hrs. (DOT)	24 hr	s. (CPSC)
E 8	NA NA	Eye	May cause blindness		
3 3	SENSITIZATION			INHALATION EFFECTS	
511	Skin NA	Respiratory	Allergen	effect NA	Cyanosis Asphyxlant
	LUNG EFFECTS (Spec				
2	Inhalation C	f vapor causes	respiratory irr	itation.	
3	Repeated contact- skin defatter	Other (Specify):			
3 -	INGESTION	Do NOT		·· <u>·</u> ········	
A TH HAZARD MIPORMATION	Induce vomiting	X induce vomiting	Give plenty of water	Get medical attention	Other (specify):
3 12	DERMAL Flush with soap	Get medical	Contaminated	Contaminated	Other
	X Flush with soap and water	attention	X dothing - remove & launder	shoes - destroy	(specify):
	Flush with plenty at least 15 minutes	of water for	Get medical attention	Other (specify):	
	INHALATION	if not breathing,			
	X Remove to fresh air	give artificial respiration	Give oxygen	Get medical attention	Other (specify):
	VENTILATION REQU	IREMENTS — Always mai	ntain exposure below perr	missible exposure limits Use with adequate	Check for air contaminant
	or environmental (health specialist	Local exhaust	ventilation	and oxygen deficiency
2.	X Other To	control to star	ndard.		
55	EYE	Face shield , HAND (SLOVE TYPE)	Buty G	Polyvinyi Other
53		and goggles		Tubber X	scohol (specify):
	Safety X	Goggies	vinyl X Neoprene		Poly- athylene
35	*	Use only NIOSH approved			Other* Under conditions
PECIAL PROTECTION INFORMATION	Self-contained	Supplied * X Can gas o	or cartridge F r vapor fi	ilter - dust, ıme, mist	other" Under Conditions (specify): exceeding TWA standard
8	OTHER PROTECTIVE				
	Rubber X	Apron Othe			
	PRECAUTIONARY LA				
3	Wash thoroughly X after handling	Do not get in eyes, on skin or	Do not breathe dust, vapor, mist,	Keep container Closed	X heat, sparks, and X closed containers
45	_	Keep from contact	—— gas		open flames
55	Do not store near combustibles	with clothing and other combustible	X Empty container may contain hazardous residues	Use explosion proof	Other (specify): TRW-00691
FECALTIONS	Other handling and sto	materials	CAUTION COMBU		
E	Avoid prolong	ged or repeated	contact with sk	in. Wash thorou	ghly with soap and water after
	contact Remo	ove contaminated	clothing. Laun		e.Avoid breathing mist or vapo
Prebe	N / I was V	Date (25	Address		P
+-	"The above infor	9/30/85	est of our knowledge. Ho	wever since data safety et:	andards, and government re 0908-2057
PLEA	change and the co	anditions of handling and u	se, or misuse are beyond (our control, Pennwalt MAK	LES NO WARRANTY, EIT

DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. User should satisfy himself that he has all current data relevant to his particular use.

1	INTE	R-OFFICE COMMUNICATION	FORM NO. SF2.
FROM: D. A	F. Borsuk		
→10: <i>R</i> . 5	Smith	DATE 10/25/85	
	Cook Dr. 1927		
			
Suger,	Manked Hand	- like the plant of the state	
_	•	satety data sheet is for the	
		Il be used at the Binney St	•
		. Please inform me of the chan	•
of the	substance and	when it will be no longer us	ed
		Thom	4
		SIGNATURE	Jennis .
RETURN TO:		DATE	
REPLY:			
REI E I .			
· 			
 -			
			
		SIGNATURE	

ORIGINATOR - DETACH AND RETAIN

8 Ps	MATERIAL SAFETY DATA SHEET "ESSENTIALLY SIMILAR" TO OSHA FORM 20 FORM 4040 (Rev. 5-84)			ADDRESS: Pennwalt Corporation Cook's Industrial Lubricants 5 North Stiles Street			
2		Product Name		i	Code No.	Linden, NJ	
_2		<u>C Dri 4706</u> Name and Molecular Fori	nula	E217	OIA	Emergency Phone N	862-2500
33		Petroleum solvent.				Other:	862-2300
8=	reu	toteum sotvent.			CAS No.(s)		
PRODUCT				6474	1-65-7		
2	Synonym				Chemical Family		
		MATERIALS	OR COMPONENTS		oleum Hydrocarbon TA (TLV, LD50, LC50, etc.)		
NAZARDOUS MGREDIÈNTS							TWA
SHIPPING Brossattion	DOT	: Combustible l	iquid, NOS NA 1	993		<u></u>	
	Boiling Po	pint/Range	Meiting Point		Freezing Point		Molecular Weight (Calculated)
•	183-1		NA °C	°F	NA	°C °F	Wide Range
PHYSICAL ROPERTIES	Specific C	Gravity (H ₂ O=1)	, 90	ressure (mm Hg)		ه ا	sity (Air=1)
2 4	0.7	61 @ 25	/ 25 °C TO		°C 10	70	1
PHYSICAL	Í	_	ţ	i	> 38	X Ether = 1	Water = 1 Butylacetate = 1
- 2	Appearan	ligible ce and Odor	100		Other .	<u> </u>	
	_ Wat	er white liquid	. Petroleum od				
∢	Flash Poli	nt	Test Method Flamma	ble Limits		Autoignitio	n Temperature/Fire Point
DATA	61	°C 142 °FC	losed Cup Lower	N/A %	Upper	% NA	°C °F
20	EXTING:	DISHING MEDIA	Water X	1 [3	Dry	Alcohol	Foam Earth or
38	spra			co ₂ 2	Chémicai	foam	sand
FIRE AN	D0	not enter Allow fi		ng Do not		e self-contained athing apparatus	
EXP			ON HAZARDS sittive Contaminat	ion Ter	mperature	Other (specify): NA	
	STABILI	TY	CONDITIONS CONT				
5	X Stat	ole Unstable	Thermal decomposition	NA Pho	radation	Polymerizat	ion Contamination
REACTIVITY DATA	INCOMPA Stro acid		ct with Strong oxidizers	Other (specify):	•		
Σ	HAZARO	OUS DECOMPOSITION	PRODUCTS - THERMAL	AND OTHER	(list)		
Ş	Carbon	n monoxide may:	form upon incom	olete comb	ustion.		
7	CONDITI	ONS TO AVOID				TRW-00693	
	Х неа	t X Open flames	X Sparks X	Other (specif	fy):		
			IAL IS RELEASED OR S] a	Keep up	wind.
	Flui wate	sh with X Absort	inateria: 1 i	tratize X		X Evacuate	e enclosed of spill
SPLL OR LEAK		oose of X Other					or may enter sewers,
「神野」	1		onsult federal, state, or loc				
3	1	-	with applicable	_		ons. Dispose	of absorbed material
	at	an approved was	ste disposal sit	lity.		CONTINUED ON PRSE SIDE	

Before using product, read and follow directions and precautions on product label and bulletins.

	1	Oral (acute)							
	L	NE							
	1	Dermat (acute) NE							1
	ŀ	Eye				inhalation (acute	y		
		NE					NE		}
	1	Chronic, Subchronic, etc							
Toxon									
ğ		Ma							
.5		NE .							-
***									1
									- 1
				•					
									}
		•							1
									1
	***	PERMISSIBLE EXPOSE	IRE LIMIT (Specif	y If TLV/T	WA or Ceiling [c])		Other: Raw I	naterial mfg. Rec	and.
		ACGIH 19	NE		OSHA 19	NE	300 1	opom TWA	
		IRRITATION	X Skin		Severe	Moderate			
		CORROSIVITY	X Eye		Severe	Moderate	Mild (trans	ient)	
		NA NA	Skin Eye	-	_∫ 4 hrs. (DOT) May cause blindne	<u>.</u>	24 hrs. (CPSC)		
		SENSITIZATION		_	_	INHALATION EF	FECTS		
5		Skin NA	Respiratory	L	Allergen	Narcotic effect N	A Cyanosis	Asphyxlant	
		LUNG EFFECTS (Spec							
	1	Inhalation of OTHER (Specify):	vapor caus	es res	oiratory irr	itation.			
3		Repeated contact- skin defatter	Other (Specify):						1
3		INGESTION	Do NOT						
2	3	Induce vomiting	X induce vomiting		Give plenty of water	Get medical attention	Other (specify):	· · · · · · · · · · · · · · · · · · ·	·
HEALTH HAZARD HIPORIATION		DERMAL Flush with soap and water	Get medical attention		Contaminated cothing - remove & launder	Contaminated shoes - destro			
		Flush with plenty of at least 15 minutes		Г	Get medical	Other			
		INHALATION	If not breath	ing,		(specify):			
		Remove to fresh air	give artificial respiration		Give oxygen	Get medical attention	Other (specify):		
		VENTILATION REQU		vays mainta		ermissible exposure li		Check for air contaminant	
Æ		or environmental h	saith specialist	L	Local exhaust	ventilation	_	and oxygen deficiency	
PECIAL PROTECTION	E	Other (specify):	To control	to st	andard.				
E		EVE	Face shield I	AND (GL	OVE TYPE)	Butyl rubber	Polyvinyl alcohoi	Other (specify):	
2		Safety 💟	Goggles	Polyvin	yl X Neoprene	Natural	Poly-		
	5	RESPIRATOR TYPE	Use only NIOSH	chloride		rubber	ethylene		
33		Self-	Supplied [Can or	cartridge	Filter - dust,	Other * U	nder conditions	1
E	1	OTHER PROTECTIVE	L	X) gas or v	арог	fume, mist	(specify): exce	eding TWA standa	ard
		Rubber y	Apron	Other (specify	1:				
		PRECAUTIONARY LA	ABELING						
ار	5	Wash thoroughly after handling	Do not get on skin or clothing	1	Do not breathe dust, vapor, mist gas	, X Keep contain	ner X Keep away heat, spark open flame	s, and closed contain	ers }
PECIAL	5	Do not store near combustibles	Keep from with clothi other comt materials	ng and i	Empty container may contain hazardous residu	proof	Other (specify):	TRW-006	94
		Other handling and stor	rage conditions	CAUTIO	ON COMBUSTIB	CE!!			•
	7]	contact Pero	eu or repea Ze contemin	red con	ntact with sl	kin. Wash the	oroughly with a	soap and water a	ter
Pres	4.0	d by	Containin	Date	Address	MEL DETUCE	EUSE MYOTO DE	Phone Phone	الالتالية
	16	ul (amount	7/12/8						
PLE	AS	Change and the co	inditions of handli	ng and use,	or misuse are beyon	dour control, Pennwa	ait MAKES NO WARRA	ernment regulations are subj NTY, EITHER EXPRESS O)R
	, i E		LIABILITY FOR	RELIANC	E THEREON. User	NUING ACCURACY should satisfy himsel	OF THE INFORMATION OF THE PARTY	ON CONTAINED HEREIN data relevant to his particula	AND

0908-2060

PENWAJ	MATERIAL S "ESSENTIALLY SI FORM 4040 (Rev. 5-84)	AFETY DAT		ET	ADDRESS: Pennwalt Corporation Cook's Industrial La 5 North Stiles Street	ubricants
Pennwal	t Product Name		Pennwalt Code	No.	Linden, NJ 07036	- -
Chemica	Cook Draw 5168	ł	17M141A		Emergency Phone Number(s)	
Chemica	I Name and Molecular Formula				Business: 201-862-25	500 .
3	Complex mixture of ch		_		Other:	ή,
	Triethanolamine, etho	xylated fatty (ester and		CAS No.(s)	
5	hexylene glycol.				Mixture	
Synony	ms				Chemical Family	
=					Synthetic	soap solution
	MATERIALS OR CO	MPONENTS		% w/w	HAZARD DATA (TLV, LD	
						
			[NE	
	Triethanolamine (CAS:	# 102-/1-6)				
5						
5 I	Hexylene Glycol (CAS:	# 107-41-5)			TLV Ceiling 25 p	ppm
2 1	Ethoxylated fatty est	er				
					<u> </u>	
5	700 0				- au duillin- D	7.5
		icant, metai c	utting, o	rawing	or drilling. Dry,	Tiquia
	or paste. NOI					
Ē						
			· · · · · · · · · · · · · · · · · · ·			
Boiling	, ,	ng Point	1	ing Point		eight (Calculated)
٠	100 °C 212 °F N	ia °C		Œ_	°C °F Wide F	Range
Specific	Gravity (H ₂ O=1)	Vapor Pressure			Vapor Density (Air=1)	
E	1.039 [@] 25 / 2	5 °C NE	<u>o </u>		°F <u>NE</u>	
Specific Solubili	ty in H ₂ O % Vo	latiles by Volume	Evap	oration Ra		Butylacetate
¥		46			Ether = 1 X Water = 1	=1
Appears	ance and Odor		Other	•		
8 6 4	Clear blue liquid, ch	· · · · · · · · · · · · · · · · · · ·				
Flash Po	oint NONE Test M	ethod Flammable Li	mits NE		Autoignition Temperatur	e/Fire Point
	°C °F	Lower	% Uppe	7	%∣ NE °C	°F
EXTIN	GUISHING MEDIA					
		Water stream X CO ₂	X Gri	mical	Alcohol X Foam	Earth or sand
*	L FIRE FIGHTING PROCEDURES					
### () Lac	o not enter Allow fire	Water may cause frothing	Do not use water		e self-contained athing apparatus	
	IAL FIRE AND EXPLOSION HAZA					
יטו ווי∞	ust explosion Sensitive to shock	Contamination	Tempera	ture	Other (specify): NA	
STABIL		NDITIONS CONTRIBU	TING TO INST	ABILITY		
▼ X st	able Unstable	Thermal	Photo		Polymerization	Contamination
	able Character	decomposition	degradati	ou 1	IA Polymenzation	
INCOM	PATIBILITY - Avoid contact with		_			
St ac	rong Strong X	Strong Oth oxidizers (spe	er scify):			
HAZAF	RDOUS DECOMPOSITION PRODU	CTS - THERMAL AND	OTHER (list)			
5			•	צווו ודדו	on incomplete combusti	ion.
S				ap		
336 C P	TIONS TO AVOID	l —	uitlen [Other		PR 111 00 44
<u> </u>	Bat Open I flames		ition urces	Other (speci	fy):	TRW-0069
STEPS	TO BE TAKEN IF MATERIAL IS F	RELEASED OR SPILLE	D			
	ush with X Absorb with sar	nd Neutralize	X Swe	ep or scoo	_ Lvacuate enclosed	X Prevent spread of spill
	v64 —	''			as entered or may ente	_
	ISPUSE UI I VI U (I I EI	ercourses or e	_		_	T PCMCTD1
WASTE	DISPOSAL METHOD - Consult fee					
7 ,						sorbod materia
§)	Assure conformity eit				rous. Dishose of ans	
	at an approved waste	drsbosgr site	or facili	ty.		CONTINUED ON REVERSE SIDE

	oral (acute) Hexylene glycol LD 50	Oral : 4000 m	ng/Kg	
.]	Dermal (acute)			
	Hexylene glycol LD 50	Dermal 13200	mg/kg Inhalation (acute)	
	NE NE		NE NE	
	Chronic, Subchronic, etc.		1	
È	_			
TOXICITY	NE			
2				
	•			
	DEDMISSIBLE EVENSLIDE LIMIT (Specify If T) V	THE or Calling (c))	, Other	
	PERMISSIBLE EXPOSURE LIMIT (Specify If JLV) ACGIH 19 83 25 ppm ceiling	OSHA 19		
	IRRITATION X Skin	Severe	Moderate	
z I i	CORROSIVITY COLL	Severe 4 hrs. (DOT)	Moderate MI	id (transient)
ĔB	NA Eye	May cause blindness		
	SENSITIZATION Respiratory	Allergen	INHALATION EFFECTS Narcotic C	ranosis Asphyxiant
212	LUNG EFFECTS (Specify):		errect NE	
ē	Inhalation of vapor causes re	spiratory irri	tation.	
31.	X Repeated contact- Other (Specify):			
	INGESTION DO NOT	Give plenty	Get medical Oti	ner
ER	DERMAL	of water Contaminated		ecify):
WEALTH HAZARD IMPONIATION	X Flush with soap and water Get medical attention	dothing - remove & launder	Contaminated Oti	ner ecify):
- 15	EYE CONTACT Flush with plenty of water for a least 15 minutes	Get medical attention	Other (specify):	
- 15	INHALATION If not breathing,	Give		ther
	respiration VENTILATION REQUIREMENTS — Always main	oxygen	attention(si	pecify):
_		X Local exhaust	Use with adequate ventilation	Check for air contaminant and oxygen deficiency
Ē.	X Other To control to s	tandard.		
AL PROTECTION POPULATION	EYE Face shield HAND (G	LOVE TYPE)	Butyl Polyviny	Other
25	Safety X Goggles Polyvi	nyi V Neoprene	Natural Poly-	(specify):
35	RESPIRATOR TYPE - Use only NIOSH approved	LA)		Inder conditions exceeding
ğZ	Self-contained Supplied * X gas or	r cartridge Fi	Iter - dust, Other me, mist (specify	
8	OTHER PROTECTIVE EQUIPMENT			
	boots X Apron (specif	(y):		
3	PRECAUTIONARY LABELING Wash thoroughly Do not get in eyes, on skin or	X Do not breathe dust, vapor, mist,	I Of Moob contains.	eep away from Store in tightly closed containers
45	after handling A on skin or clothing Keep from contact	— gas		ben flames
FECIAL	Do not store near with clothing and other combustible materials	Empty container may contain hazardous residues		ther Pecify): TRW-00696
2 M	Other handling and storage conditions DC Avoid prolonged or repeated of			
•	contact. Remove contaminated	ontact with sk clothing. Laun	in. wasn thoroughly der before reuse.Avo	with soap and water after poid breathing mist or vapor
Prepar	Date	Address		Phone
ALA DI EA	"The above information is accurate to the bes	t of our knowledge. How	wever, since data, safety standards,	and government regulations are subject to
PLEA	Change and the conditions of handling and use	e, or misuse are beyond of ETENESS OR CONTINU	our control, Pennwalt MAKES NO JING ACCURACY OF THE INFO	WARRANTY, EITHER EXPRESS OR
				Gate relevant to this particular use.



COOK'S Industrial Lubricants

5 North Stiles Street • P.O. Box 87 • Linden, New Jersey 07036 • (201) 862-2500

FOUNDED 1868 • Cutting Oils • Drawing Compounds • Soluble Oils • Grinding Fluids • Stamping Oils • Hydraulic Oils • Maintenance Oils



U.S. DEPARTMENT OF LABOR WORKPLACE STANDARDS ADMINISTRATION BUREAU OF LABOR STANDARDS

MATERIAL SAFETY DATA SHEET

Box 810, 36 Draffin Road, Hilton, N.Y. 14468

	TION I: MAT	ERIAL AND IL	INUFACTURER IDENTIFICATION		
MANUFACTURER'S NAME MONROE CHEMICAL COMPANY	•		EMERGENCY 1 716-39	ELEPHON 2-343	NE NO. 34
ADDRESS NUMBER, STREET, CITY, STATE AND 36 Draffin Road, Hilton,	NY 144	68			
CHEMICAL NAME AND SYNONYMS N/A			TRADE NAME AND SYNONYMS COOL- TOOL Cutting	Oil	
CHEMICAL FAMILY N/A •			FORMULA N/A		1
	SECT	ION II: HAZAR	DOUS INGREDIENTS*		
PAINTS, PRESERVATIVES/SOLVENTS	%	TLV (UNITS)	ALLOYS AND METALLIC COATINGS	%	TLV (UNITS)
PIGMENTS	.		BASE METAL		
CATALYST			ALLOYS .	1	
VEHICLE			METALLIC COATINGS	1	
SOLVENTS CAS # 7/-35-6 1,1,1,-Trichloroethane	33	350ppm	FILLER METAL PLUS COATING OR CORE FLUX	1	
ADDITIVES			OTHERS		
OTHERS					
HAZARDOU	S MIXTURES	OF OTHER L	IQUIDS, SOLIDS, OR GASES®	•	TLV (UNITS)
Mineral Oil CAS # 8012-	95-1			34	5 mg/m
					mist
	\$	ECTION III: PI	IYSICAL DATA		
BOILING POINT (OF)		198	SPECIFIC GRAVITY (H ₂ 0 = 1)		1.035
VAPOR PRESSURE (mm Hg.) @ 20°C		92.7	PERCENT VOLATILE BY VOLUME (%)		35
VAPOR DENSITY (AIR = 1)		4.5	EVAPORATION RATE (= 1)		-
SOLUBILITY IN WATER		nil			
APPEARANCE AND ODOR Golden oil			ristic odor		
	SECTION IV	FIRE AND E	PLOSION HAZARD DATA		
FLASH POINT METHOD USED! COC greate	r than	350° F	FLAMMABLE LIMITS NO E	dete	rmined
EXTINGUISHING MEDIA Water fog,	Foam,	Dry che	mical		
SPECIAL FIRE FIGHTING PROCEDURES Use usual	procedi	res as	with oil fire, may emit CO ₂	, co.	HCL
UNDUAL FIRE AND EXPLOSION HAZARDS					
Closed co	ntainer	s will	pressurize at high temperat	ure.	

		¥	CTION	N V. HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE	ppm Max.	for vap	or.	$5mg/m^3$ for oil mists.
EFFECTS OF OVEREXPOSUR	E			e range of 500 to 1000 ppm of vapor
EMERGENCY AND FIRST AID	PROCEDURES			·
		esh air	, ke	eep warm and quiet until recovery.
skin and eyes-	flush eye	s with	pler	nty of water. For skin and eyes get medical
attention irra	•	•		
Ingestion- tre	at symptom			Low oral toxicity, stomach evacuation may b
	UNSTABLE			S TO AVOID
STABILITY	OKSTABLE	 		
	STABLE	Op	en i	fames, welding arcs can decompose vapors.
INCOMPATIBILITY (MATERIA) Strong oxidizi				
HAZARDOUS DECOMPOSITION	PRODUCTS Ex	posure	to i	high temperatures or open flames generates
hydrogen chlor:	ide and ve	ry smal	l ar	mounts of Phosgene and Chlorione.
HAZARDOUS	MAY OCC	UR	П	CONDITIONS TO AVOID
POLYMERIZATION	WILL NOT	CCCUR	x	
				
STEPS TO BE TAKEN IN CASE	MATERIAL IS RE	SECTION OF S	N VIII:	SPILL OR LEAK PROCEDURES
				t material and bury in approved landfill.
	<u></u>			
WASTE DISPOSAL METHOD				
Collect and dis	spose as w	<u>aste oi</u>	<u>l ir</u>	n approved landfill or incinerate
in approved fa	oilitu			
III approved ta	CIJILY,			
RESPIRATORY PROTECTION :	CPECIEV TVDE	SECTION VI	1: SPE	ECIAL PROTECTION INFORMATION
		use sef	COI	ntained breathing apparatus.
	AL EXHAUST			SPECIAL
VENTILATION	HANICAL IGENES			OTHER ~
(n +/	o control to TLV
PROTECTIVE GLOVES	TOATGE ACT	rttarto	<u> </u>	TEYE PROTECTION
Neoprene to ave	oid prolon	ged con	tact	t Safety glasses
None				
		SECT	ION IX	X: SPECIAL PRECAUTIONS TRW-00699
RECAUTIONS TO BE TAKEN Handle with re			oid	breathing vapors in concentrations
over 350 ppm w	ith a maxi	mm pea	k of	f 500 ppm. Store in cool, dry place.
				controlled. Do not weld or cut empty
				
- Jeff- Cuff	·			4/84
				0908-2065



EASTERN METAL MILL PRODUCTS COMPANY * 1405 East Street * Dedham, Massachusetts * 3/9/1/000

MATERIAL SAFETY DATA SHEET

Product Name: Copper/Bronze/Brass Standard & Non-Standard

distributor warehouse items.

Chemical Family: Copper Alloys Use of Product: article fabrication

Date: 11-18-85

Product includes the following CDA Alloys:

101	230	332*	510
102	240	335*	521
110	260	353*	544*
122	268	360*	642
210.	314/316*	365*	655
220	330*	411	752
		485*	

^{*}Denotes leaded alloys

PHYSICAL DATA

Melting Point: 1500-2100° F

00-2100° F Specific Gravity: 7.5-9.0g/cc

Boiling Point: N.A. Vapor Pressure: N.A.

The product is solid at room temperature and exhibits no odor. The product is insoluble in water.

CHEMICAL COMPOSITION

Alloys may contain any or all of the chemical constituents listed below:

	CAS No.	Range %	8 Hr. TWA
Cop per	7440-50-8	45-99.98	1 mg/M3 dust
			0.1 mg/M3 fume
Zinc	7440-66-6	0-43	5 mg/M3 oxide
Aluminum	7429-90-5	8-0	10 mg/M3
Iron	7439-89-6	0-6	10 mg/M3
Lead	7439-92-1	0-4.5	0.05 mg/M3
Manganese	7439-96-5	0-5	1 mg/M3
Nickel	7440-02-0	0-12.0	1 mg/M3
Phosphorus	7723-14-0	0-0.5	0.1 mg/M3
Silicon	7440-21-3	0-4.5	10 mg/M3
Tin	7440-31-5	0-4.5	10 mg/M3

A = A +

STOREAGE, FIRE & REACTIVITY

Flash Point: N.A. Auto-ignition Temp: N.A. Flammability Limits N.A.

In the form as distributed by Eastern Metal Mill Products Co., there are no fire or expolsion hazards with these alloys. Never use water as an extinguishing agent around molten metal. Water will react violently with any molten metal. Copper reacts violently with acetylene.

These solid alloys are stable and non-hazardous at room temperatures. Material may react with acids, bases or oxidizers.

Material in forms as distributed by Eastern Metal does not present a significant health hazard under normal handling and storeage conditions.

HEALTH HAZARD DATA

Under normal handling conditions the solid alloy presents no significant health hazards. Processing of the alloy by dust or fume producing operation (grinding, buffing, forgings, etc.) may result in the potential for exposure to airborn metal particulates or fume. When generating dust or chips wear safety masks & glasses.

Chronic exposure to copper, zinc, lead and manganese in unalloyed from or dust may cause metal fume fever. Symptoms of metal fume fever include fever, fatigue, dryness of throat, head and body ache. fever and chill. Overexposure to copper and lead in unalloyed form may result in skin and hair discoloration. Chronic exposure to fume may affect the central nervous system leading to emotional disturbances, gait and balance difficulties and paralysis.

Nickel and lead have been identified as potential cancer causing agents.

The product will not irritate the skin or eyes in bulk form. Particulates may cause dermatitis die to mechanical irritation.

First Aid:

Ingestion: Ingestion of significant amounts of copper alloys are unlikely. Seek medical help if large quantities of product are ingested.

Inhalation: Remove from exposure to dust or fume if present. Seek

medical help if required.

Skin Contact: Wash thoroughly with soap and water, possible irritation.

Fye Contact: Flush with water for at least 15 minutes. Seek medical help if required.



DATE: 3/26/85

REV. DATE: 4/21/86

REVISION NO.: 2

MATERIAL SAFETY DATA SHEET

SECTION 1

MANUFACTURER'S NAME:

HUSSEY COPPER LTD.

ADDRESS:

Washington Street LEETSDALE, PA. 15056

EMERGENCY PHONE NO.:

412-857-4200

CHEMICAL NAME AND SYNONYMS:

COPPER

TRADE NAME AND SYNONYMS:

(OFHC) (DHP) (ETP) Electrolytic Tough pitch

CDA Alloy 101, 102, 104, 105, 107, 110,* 113,114, 115, 116, 120, 122

* Inclusive Alloy 110 Silver Plate

CHEMICAL FAMILY:

COPPER

SECTION 11 - HAZARDOUS INGREDIENTS

INGREDIENT	PERCENT	CAS NO.	OSHA-PEL/ACGIH-TLV	
Base Metal			Exposure Levels	
Copper	99.9*	7440-50-8	See Section V	

HAZARDOUS MIXTURES OF OTHERS LIQUIDS, SOLIDS, OR GASES:

If exposure to copper dust/fume are kept below Permissible Exposure Limits (PEL)/
Threshold Limit Value (TLV) all trace elements should not pose any health risk.

* Copper plus silver - All grades of copper covered (including silver bearing 104, 105, 107, 113, 114, 115, 116) are expected to contain less than .1% silver.

SECTION 111 - PHYSICAL DATA

MELTING

1949º F

Vapor Pressure (mm Hg.)

@ 1628° C

- 1 mm

Solubility in Water

negligible

Specific Gravity (H² O * 1)

8.9

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used)

Not applicable *

Extinguishing Media

Not Applicable

Special Fire Fighting Procedures

Not applicable

TRW-00702

Unusual Fire and Explosion Hazards

Not applicable

0908-2068

K Under normal conditions. Heavy concentrations ot tine copper dust may cause flash fire if exposed to ignition source.

SECTION V - HEALTH HAZARD DATA

EXPOSURE LEVELS:

Copper dusts and mists - OSHA (PEL): TWA = 1MG/M3. ACGIH (TLV): TWA = 1 MG/M3.

Copper fume - OSHA (PEL): TWA- 0.1 MG/M3.ACGIH (TLV): TWA- 0.2 MG/M3.

CARCINOGENICITY:

Not listed as a carcinogenic in NTP or IARC monographs.

EFFECT OF OVERDOSE:

Fume and dust - sneezing, congestion, nausea, metallic taste,

chills, fever.

EMERGENCY AND FIRST AID PROCEDURES:

Skin: Flush thoroughly with water. Eyes - flush with water, call Physician. Ingestion - drink water induce vomiting, call Physician. Inhalation - remove

victim to fresh air, call Physician.

Copper fume, dusts and mists are listed by OSHA as air contaminants.

PRIMARY ROUTE(S) OF ENTRY: Inhalation

SECTION VI - REACTIVITY DATA

STABILITY - Stable

INCOMPATABILITY (material to avoid): (Dust & Fume) ocetylene, chlorine

HAZARDOUS DECOMPOSITION PRODUCTS: Copper Fume/dust

HAZARDOUS POLYMERIZATION - Will Not Occur

SECTION V11 - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Dust or Fume — wear respirator follow OSHA use instructions, shovel up, or vacuum and place in approved DOT container and seal. Wash contaminated clothing.

WASTE DISPOSAL METHOD:

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Follow federal, state and local regulations for disposal.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify Type) : dust or fume - NIOSH/MSHA approved

dust/fume respirator

VENTILATION - Local Exhause: dust/fume - if exposure levels exceeded

EYE PROTECTION: (dust) goggles

SECTION IX - SPECIAL PRECAUTIONS

TRW-00703

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Avoid breathing dust or fumes. Do not take internally.

0908-2069

Emergency Phone Number: (508) 853-3630

issue Date: February 27, 1985

MATERIAL SAFETY DATA SHEET

TRADE NAME (Common or Synonym): CHEMICAL NAME:

Brass, Bronze, Aluminum Bronze Copper Base Alloys

1. INGREDIENTS

			EXPOSU	RE LIMITS
Material or Compound	CAS Number	% Weight	OSHA PEL (mg/m ³)	ACGIH TLV (mg/m ³)
Aluminum (Al)	7429-90-5	0 - 14	15	5
Antimony (Sb)	7440-36-0	0.8 - 3.0	0.5	0,5
Copper (Cu)	7440-50-8	61 - 85	1	1
Iron (Fe)	7439-89-6	0.01 - 0.04	10	10
Lead (Pb)	7439-92-1	3.0 - 24.5	0.05	0.05
Nickel (Ni)	7440-02-0	0.5 - 1.0	1	1
Tin (Sn)	7440-31-5	4.7 - 14.0	2	2
Zinc (Zn)	7440-66-6	0.5 - 4.0	15	5

NOTE: The above is a summary of the principle elements. Various grades of copper base alloys will contain varying amounts of these elements. Trace elements may also be present in minute amounts.

2. PHYSICAL DATA

Material is (at normal conditions):
O LIQUID

SOLID

GAS

OTHER

Vapor Density:

N/A

Acidity/Alkalinity

pH - N/A

Specific Gravity (H2O = 1):

Approximately 8

Solubility In Water (% by Weight):

Appearance and Odor: Yellow-Reddish, Odorless Melting Point (approximate): 1290 - 2260° F

Vapor Pressure (mm Hg @ 20° C): N/A

% Volatile By Volume: N/A

Boiling Point: N/A

3. PERSONAL PROTECTIVE **EQUIPMENT**

Respiratory Protection:

Appropriate dust/mist/fume respirator should be used to avoid excessive inhalation of particulates. If exposure limits are reached or exceeded, use NIOSH approved equipment.

Eyes and Face:

Safety glasses should be worn when grinding or cutting. Face shields should be worn when welding or cutting.

Hands, Arms and Body:

Protective gloves should be worn as required for welding, burning or handling operations. Other Clothing and Equipment:

As required depending upon operations and safety codes.

4. EMERGENCY MEDICAL **PROCEDURES**

Inhalation:

Remove to fresh air; if condition continues, consult a physician.

Eye Contact:

Flush thoroughly with running water to remove particulate; obtain medical attention.

Skin Contact:

Remove particles by washing thoroughly with soap and water. Seek medical attention if condition persists.

Ingestion:

If significant amounts of metal are ingested, consult a physician.

5. HEALTH AND SAFETY INFORMATION

HEALTH

Copper Alloy products in their solid state present no inhalation, ingestion, or contact health hazard. Operations such as burning, welding, sawing, brazing, grinding, and machining, which result in elevating the temperature of the product to or above its melting point, or result in the generation of airborne particulates, may present hazards. The major exposure hazard is inhalation. Effects or overexposure to fume and dust are as follows:

Acute:

Excessive inhalation of metallic fumes and dust may result in irritation of eyes, nose and throat. High concentrations of fumes and dust of iron-oxide, manganese, copper, zinc and lead may result in metal fume fever. Typical symptoms last from 12 to 48 hours and consist of a metallic taste in the mouth, dryness and irritation of the throat, chills and fever.

Chronic and prolonged inhalation of high concentrations of fumes or dust of the following elements may lead to the conditions listed opposite the element:

Aluminum:

May initiate fibrotic changes to lung tissue.

Copper:

No chronic debilitating symptoms indicated.

Siderosis, pulmonary effects. No chronic debilitating symptoms indicated.

Lead:

Inhalation of lead particles may result in lead-induced systemic toxicity.

Lesions of the skin and mucous membranes, possible cancer of the nose or lungs-bronchogenic carcinoma.

Chronic exposure to tin fumes may cause an apparent benign pneumoconiosis, stannosis.

Zinc:

Gastrointestinal inflammation reported in animal studies.

Medical Conditions Aggravated by Exposure: Individuals with chronic respiratory disorders (i.e.: asthma, chronic bronchitis, emphysema, etc.) may be adversely affected by any fume or airborne particulate matter exposure. Occupational Exposure Limits: See Products Ingredients Section 1. Chromium and Nickel have been identified by the International Agency for Research on Cancer (IARC) and/or the National Toxicology Program (NTP) as potential cancer causing agents.

FIRE AND EXPLOSION

Flash Point:

Auto Ignition Temperature:

N/A

Flammable Limits in Air:

Lower: N/A Upper: N/A

Extinguishing Media:

For molten metal use dry powder or sand. Extinguishing Media NOT TO BE USED:

Do not use water on molten metal.

Fire and Explosion Hazards:

Copper Alloy products do not present fire or explosion hazards under normal conditions. Fine metal particles such as produced in grinding or sawing can burn. High concentrations of metallic fines in the air may present an explosion hazard.

REACTIVITY

Stability:

Stable

Unstable

Incompatibility (materials to avoid):

Reacts with strong acids to form hydrogen gas.

Conditions to Avoid:

Copper Alloys at temperatures above the melting point may liberate fumes containing oxides of iron and alloying elements. Avoid generation of airborne fume and dust.

Hazardous Decomposition Products:

Metallic dust or fumes may be produced during welding, burning, grinding and possible machining. Refer to ANSI Z49.1.

6. ENVIRONMENTAL

Spill or Leak Procedures:

Fine turnings and small chips should be swept or vacuumed. Scrap metal can be reclaimed for reuse.

Waste Disposal Method*:

Used or unused product should be disposed of in accordance with Federal State or local laws and regulations.

*Disposer must comply with Federal, State and Local disposal or discharge laws.

7. ADDITIONAL INFORMATION

In welding, precautions should be taken for airborne contaminants which may originate from components of the welding rod.

Arc or spark generated when welding or burning could be a source of ignition for combustion and flammable materials.

TRW-00705

DISCLAIMER

The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, express or implied, regarding the accuracy or correctness.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS		
Copper Alloy		
CHEMICAL FAMILY	FORMULA	TRADE NAME
Copper	Mixture	Alloy 197
DESCRIPTION		CAB NO.
Red orange metallic soli	id	Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash hands with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS	
Eyes Gloves Other	Dust - goggles Impervious (if necessary) NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occurs	As required to keep airborne concentrations of copper dust below TLV.	

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust 1 mg/m ³	TDLO 120 ug/kg (human)	No data	Inhalation - metal fume fever, respiratory tract irritation

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POL	NT	OSHA CLASSIFICATION		FLAMMABLE	LOWER	UPPER		
METHOD	Not Applicable	Non-combu	stible solid	EXPLOSIVE LIMITS	N/A	N/A		
	EXTINGUISHING MEDIA Use extinguishing media suitable for surrounding material.							
SPECIAL F	SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES Use NIOSH/MSHA approved positive pressure							
İ	self-contained breat	ning apparatus when	any material is invo	olved in a fir	e. •			

THRESHOLD LIM	Copper dust 1 mg/m ³ , fume 0.2 mg/m ³ (ACGIH 1985-86)	
SYMPTOMS OF C	Dust and fume - sneezing, congestion, metallic taste, nausea, chi	lls, fever
	Tume: Wash with EMERGENCY FIRST-AID PROCEDURES water before eating or smoking. If an irritation develops, call a phy	sician.
EYES	Dust or fume: Flush with water for 15 minutes, call a physician.	
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physicia	n.
INHALATION	Dust or fume: Remove victim to fresh air, call a physician.	TRW-00706

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50 Not known to be carcinogenic CARCINOGENICITY Copper 120 ug/kg (human) ACUTE ORAL TDLO Not known to be mutagenic MUTAGENICITY Dust is irritating ACUTE DERMAL LD 50 EYE IRRITATION No data Dust may be irritating PRIMARY SKIN IRRITATION No data ACUTE INHALATION LC 50 PRINCIPAL ROUTES OF ABSORPTION Inhalation of dust or fume EFFECTS OF ACUTE EXPOSURE Dust or fume: Skin, eye and mucous membrane irritation, metal fume fever, respiratory tract irritation. EFFECTS OF CHRONIC EXPOSURE None expected at industrial use levels. Chronic overexposure may

SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

ACTION FOR MATERIAL RELEASE OR SPILL

cause liver and kidney effects.

Dust or Fume: Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill, use the emergency telephone number shown on the front of this sheet.

TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

WASTE DISPOSAL METHOD

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - SHIPPING DATA

D.O.T. CLASS Not regulated

SECTION IX - REACTIVITY DATA

STABLE	X UNSTABLE	AT	°c	° _F	HAZARDOUS	MAY OCCUR
		_			POLYMERIZATION	WILL NOT OCCUR X
ONDITIO	IS TO AVOID	Presenc	e of carbo	on monoxid	e dring melting	
		مستسم	iust and fi	ume - acets	ylene, chlorine	
NCOMPAT	IBILITY (Material to	AVOID)	iast and i	unio acci,	yiene, eniorme	
				pper fume		

SECTION X - PHYSICAL DATA

MELTING POINT No data	VAPOR PRESSURE N.A.	VOLATILES	N.A.
BOILING POINT No data	SOLUBILITY IN WATER Insoluble	EVAPORATION RATE	N.A.
SPECIFIC GRAVITY (H,O - 1) No data	pH N.A.	VAPOR DENSITY (Air = 1)	N.A.

INFORMATION FURNISHED BY:

Environmental Hygiene and Toxicology

(203) 789-5436

DATE

March 25, 1986

TRW-00707

Department of Environmental Hygiene and Toxicology (203) 789-5436

Clin corporation

120 Long Ridge Road, Stamford, Connecticut 06904

OCEAN® Network
EMERGENCY PHONE 1-800-01 IN-911



OCEANSM Network PHONE (203) 356-2345

HEALTH 2 0 0 HAZARD RATING

MATERIAL SAFETY DATA

Olin Corporation, 120 Long Ridge Road SECTION 1 - IDENTIFICA

Stanford Coppositions 06904	SECTION 1 - IDENTI	FICATION	
CHEMICAL NAME & SYNONYM			
Copper Alloy			
CHEMICAL FAMILY	FORMULA	TRADE NAME	
Copper		ALLOY B-28	
DESCRIPTION		CAS NO.	
Metal		<u> </u>	

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive operations and melting only. Do not get in eyes, on skin or on clothing. Do not take internally. Avoid breathing dust or fumes.

PROTECT	IVE EQUIPMENT	VENTILATION REQUIREMENTS
Eyes	Dust and Fume - Goggles	Dust or fume - Local exhaust or general
Gioves	None necessary	ventilation required as dictated
Other	None necessary	by airborne concentrations.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROX.	osha Pel	LD 1 0	LC 80	SIGNIFICANT EFFECTS
Copper		Dust 1 mg	/m ³ mg/m ³		Dust and fume - chills,
Nickel		Dust 1 mg			Dust or metal - dermatitis

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

PLASH POINT	Not	OBHA CLASSIFICATION	FLAMMABLE · LOWER EXPLOSIVE	UPPER
METHOD	Applicable	Not Applicable	LIMITE	
EXTINGUISHIN	IG MEDIA			,
Not A	Annlicable			
SPECIAL PIRE	HAZARO & FIRE FI	GHTING PROCEDURES USE NIOSH/M	SHA approved self-containe	d
breat	thing apparatus	where this material is involved in a	fire.	

THRESHOLD LI	MIT VALUE	
•	None established.	
SYMPTOMS OF	Dust or Fume: Sneezing, congestion, mausea, chills, dermatitis	etallic taste,
SKIN	Dust or fume: EMERGENCY FIRST-AID PROCEDURES Flush thoroughly with water.	7770
EYES	Dust or fume: Flush with water for 15 minutes, call a physician.	TRW-00708
INGESTION	Dust or fume: Drink water, induce vomiting by sticking finger down through	at, call a physician.
INHALATION	Dust or fume: Remove victim to fresh air, call a physician.	
		0908-2074

CHEMICAL NAME ALLOY B-28

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL Lowest Published Lethal

CARCINOGENIC Dust may cause respiratory

tract cancer

CLITTE DEFINAL LO SE

No available data

Dose - (Copper) 120 mg/kg (human) MUTAGENIC Not known to be mutagenic Eye IRRITATION Dust and fume - irritants
PRIMARY SKIN IRRITATION Dust is irritant

AGUTE INHALATION LE S

No available data

CIPAL ROUTES OF ASSORPTION

Inhalation, ingestion of metal, dust or fume

ETE OF ACUTE EXPOSURE

Dust or fume: Congestion, gastro-intestinal distress, chills

EFFECTS OF CHRONIC EXPOSURE

Dust and fume: May cause kidney, liver or spleen damage, anemia, dermatitis

SECTION VII - SPILL OR LEAKAGE PROCEDURES (Control Procedures)

STEPS TO SE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Dust or fume - Wear NIOSH/MSHA approved dust and fume respirator. Pollow OSHA regulations for respirator use. (See 29 CFR 1910.134). Shovel or sweep up and place in an approved DOT container and seal. Wash all contaminated clothing before reuse.

In the event of a large spill use the emergency telephone number shown on the front of this sheet.

DONTEN JAROGAN PERME

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - REACTIVITY DATA

MAY OCCUR STARLE X UNITABLE BUDDRASAH POLYMERIZATION WILL NOT OCCUR X Presence of carbon monoxide during melting CONDITIONS TO AVOID Dust and fume - acetylene, chloride INCOMPATABILITY DAVI KAZARDOUS DECOMPOSITION PRODUCTS Copper fume, nickel carbonyl

SECTION IX - PHYSICAL DATA

MELTING POINT	VAPOR PRESSURE	VOLATILES
BOILING POINT	SOLUGILITY IN WATER	EVAPORATION RATE
SPECIFIC GRAVITY(H ₂ 0 °1)	900	VAPOR DENSITY(AL = 1)
	1	

INFORMATION FURNISHED BY:

A. L. Gaudreau (203) 789-5434

DATE

October 19, 1984

Department of Environmental Hygiene and Toxicology

III CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904

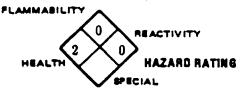
OCEANSM Network **EMERGENCY PHONE (203) 356-2345** 0908-2075

TRW-00700



EMERGENCY PHONE (203) 356-2345

Olin Corporation, 120 Long Ridge Road Stamford, Conn. 06904



MATERIAL SAFETY DATA

SECTION I - IDENTIFICATION

Copper Alloy			
COPPER	FORMULA	TRADE NAME ALLOY B-30	
DESCRIPTION Metal		CAS NO.	···

SECTION II — NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive operations and melting only. Do not get in eyes, on skin or on clothing. Do not take internally. Avoid breathing dust or fumes.

CONNOSI	VE ACTION ON MATERIALS (Metals, Plantic, Ru	50a, Etc.)
PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS
Eyes	Dust and Fume - Goggles	Dust or fume - Local exhaust or general
Gloves	None necessary	ventilation required as dictated
Other	None necessary	by airborne concentrations.

SECTION III – HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROX.	osha Pel	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper		Dust 1 mg, Fume 0.1	m ³ ng/m ³		Dust and fume - chills, gastro-intestinal distre

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT METHOD	Not Applicable	OSHA CLASSIFICATIO Not Applic		PLAMMABLE EXPLOSIVE LIMITS	- LOWER	UPPER
EXTINGUISHIN Not A	pplicable					
SPECIAL FIRE	HAZARO & FIRE F	GHTING PROCEDURES	Use NIOSH/M	ISHA approved self-	containe	d
breati	hing apparatus	where this material	is involved in	a fire.		

None established.	
over exposure Dust or Fume: Sneezing, congestion, metallic tas nausea, chills	ste,
Dust or fume: EMERGENCY FIRST-AID PROCEDURES Flush thoroughly with water.	
Dust or fume: Flush with water for 15 minutes, call a physician.	
Dust or fume: Drink water, induce vomiting by sticking finger down throat, call a p	hysician.
Dust or fume: Remove victim to fresh air, call a physician.	TPW-0071
	Dust or Fume: Sneezing, congestion, metallic tas nausea, chills Dust or fume: EMERGENCY FIRST-AID PROCEDURES Flush thoroughly with water. Dust or fume: Flush with water for 15 minutes, call a physician. Dust or fume: Drink water, induce vomiting by sticking finger down throat, call a physic or fume:

CHEMICAL NAME ALLOY B-30

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL Lowest Published Lethal

Dose - (Copper) 120 mg/kg (human) MUTAGENIC

CARCINOGENIC

Not known to be carcinogenic

ACUTE DERMAL LD 50

No available data

Not known to be mutagenic EYE IRRITATION Dust and fume - irritants

PRIMARY SKIN IRRITATION

Dust is irritant

ACUTE IMMALATION I.C. on

No available data

PRINCIPAL ROUTES OF ASSORPTION

Inhalation, ingestion of metal, dust or fume

EFFECTS OF ACUTE EXPOSURE

Dust or fume: Congestion, gastro-intestinal distress, chills

EFFECTS OF CHRONIC EXPOSURE

Dust and fume: May cause kidney, liver or spleen damage, anemia

SECTION VII - SPILL OR LEAKAGE PROCEDURES (Control Procedures)

STEPS TO SE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Dust or fume - Wear NIOSH/MSHA approved dust and fume respirator. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134). Shovel or sweep up and place in an approved DOT container and seal. Wash all contaminated clothing before reuse.

In the event of a large spill use the emergency telephone number shown on the front of this sheet.

WASTE DISPOSAL METHOD

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII -- REACTIVITY DATA

STAGLE X UNSTABLE HAZAROOUS POLYMERIZATION

MAY OCCUR WILL NOT OCCUP X

CONDITIONS TO AVOID

INCOMPATABILITY (M

Dust and fume - acetylene, chloride

HAZAROOUS DECOMPOSITION PRODUCTS

Copper fume

SECTION IX - PHYSICAL DATA

MELTING POINT	No avail. data	VAPOR PRESSURE	VOLATILES
BOILING POINT		SOLUSILITY IN WATER	EVAPORATION RATE
SPECIFIC GRAVITY	120-11	eH	VAPOR DENSITY(AL = 1)
DENSITY	lo avail. data		

INFORMATION FURNISHED BY:

A. L. Gaudreau (203) 789-5434

DATE

July 9, 1984

Department of Environmental Hygiene and Toxicology

CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904 **EMERGENCY PHONE (203) 356 - 2345**

TRW-00711

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS Copper, oxygen free					
CHEMICAL FAMILY	FORMULA	TRADE NAME			
Copper	Mixture	Alloy 102			
DESCRIPTION	ESCRIPTION				
Red orange metallic sol	lid	Not assigned/mixture			
1		_			

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occurs	As required to keep airborne concentrations of copper below TLV.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust 1 mg/m ³	TD _{LO} 120 ug/kg (human)	No data	Inhalation - metal fume fever, respiratory tract irritation

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT		OSHA CLASSIFICATION	FLAMMABLE	LOWER	UPPER
METHOD	Not applicable	Non-combustible solid	EXPLOSIVE LIMITS	N/A	N/A
EXTINGUIS	BHING MEDIA Use extinguishing	media suitable for surrounding materials			
SPECIAL F	IRE HAZARD & FIRE FIGH self-contained bre	ting procedures Use NIOSH/MSH eathing apparatus when any material is in	A approved pos volved in a fir	sitive pres	ssure

THRESHOL	D LIMIT VALUE
	Copper; dust - 1 mg/m ³ , fume 0.2 mg/m ³ (ACGIH 1985-86)
SYMPTOMS	OF OVER EXPOSURE
	Dust and fume: Sneezing, congestion, metallic taste, nausea, chills, fever.
	Dust of fume: Wash with emergency first-aid procedures
SKIN	soap and water before eating or smoking. If an irritation develops, call a physician.
EYES	Dust or fume: Flush thoroughly with water for 15 minutes. Call a physician.
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.
INHALATIO	Dust or Fume: Remove victim to fresh air. Call a physician. TRW-00712

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50	No data for alloy	CARCINOGENICITY MUTAGENICITY	Not known to be carcinogenic Not known to be mutagenic
ACUTE DERMAL LD 50	No data for alloy	EYE IRRITATION PRIMARY SKIN IRRITA	Dust is irritating Dust may be an irritant
ACUTE INHALATION LC 50	No data for alloy		
PRINCIPAL ROUTES OF ABSO Inhalation of dust	or fume, dermal		
EFFECTS OF ACUTE EXPOSU fume fever, respir	atory tract irritation.		nucous membrane irritation, metal
EFFECTS OF CHRONIC EXPO		at industrial use	levels. Chronic overexposure may

SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

ACTION FOR MATERIAL RELEASE OR SPILL

Dust or Fume: Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill, use the emergency telephone number shown on the front of this sheet.

TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

WASTE DISPOSAL METHOD

Dispose of contaminated product, empty containers and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - SHIPPING DATA

D.O.T. CL	ASS	Not regul	ated		
		SECTI	ON IX - REA	CTIVITY DATA	
STABLE	X UNSTABLE	AT °C	o _F	HAZARDOUS	MAY OCCUR
				POLYMERIZATION	WILL NOT OCCUR X

SINDLE TO UNDINDLE	Ai	C		TIMEATIBOOG	MAI 000011
Į			-	POLYMERIZATION	WILL NOT OC
CONDITIONS TO AVOID	Presence	e of carbo	n monoxide	e during melting	
INCOMPATIBILITY (Material to	Avold) di	ust and fu	me – acety	lene, chlorine	
HAZARDOUS DECOMPOSITIO	N PRODUCTS	cop	per fume		

SECTION X - PHYSICAL DATA

MELTING POINT	1981°F	VAPOR PRESSURE	N/A	VOLATILES	N/A
BOILING POINT	No data	SOLUBILITY IN WATER	Insoluble	EVAPORATION RATE	N/A
SPECIFIC GRAVITY	(H ₂ O * 1)	pH N/A		VAPOR DENSITY (Air * 1)	N/A
*DENSITY	.323 pounds/in ³				

INFORMATION FURNISHED BY:

Environmental Hygiene and Toxicology

(203) 789-5436

DATE March 27, 1986

TRW-00713

Department of Environmental Hygiene and Toxicology (203) 789-5436



120 Long Ridge Road, Stamford, Connecticut 06904

OCEAN® Network

MATERIAL SAFETY DATA

EMERGENCY PHONE 1-800-OLIN-911

SECTION 1 - IDENTIFICATION

CHEMICAL NAME & SYNONYMS		
ETP Copper, elect	trolyte tough pitch	
CHEMICAL FAMILY	FORMULA	TRADE NAME
Copper	Cu	Alloy 110
DESCRIPTION		CAS NO.
Metal	i .	7440-50-8

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash hands with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS	
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur.	As required to keep airborne concentrations of copper below TLV.	

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL		OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Qust Fume	1 mg/m ³ 0.1 mg/m ³	TD _{LO} 120 ug/kg (human)	No data	Metal fume fever, respiratory irritation
				II	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POIN	NT.	OSHA CLASSIFICATION	FLAMMABLE	LOWER	UPPER
METHOD	Not Applicable	Non-combustible	EXPLOSIVE	N/A	N/A
EXTINGUISI	HING MEDIA				
]	Non-combustible - C	choose extinguishing media suitat	ole for surrounding n	naterials.	
	RE HAZARD & FIRE FIGHTI		MSHA approved pos		
	self-contained breat	hing apparatus when any materis	ıl is involved in a fir	e.	

THRESHOLD LIM	IT VALUE	
	Copper, Dust 1 mg/m ³ , Fume 0.2 mg/m ³ (ACGIH 1985-86)	
SYMPTOMS OF O	VER EXPOSURE	
	Dust and fume - chills, sneezing, congestion, metallic taste, nausea,	fever
Dust	or fume: Wash with EMERGENCY FIRST-AID PROCEDURES	
SKIN	soap and water before eating or smoking. If an irritation develops, ca	ll a physician.
EYES	Dust or fume: Flush thoroughly with water for 15 minutes, call a phys	iciar
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	0908-2080
INHALATION	Dust or fume: Remove victim to fresh air, call a physician.	TRW-00714





VIII	· 2 0 NEACTIVITY	MAIERIAL
EMERGENCY PHONE (203) 3 Olin Corporation, 120 Long Ridge F	> SECIAL	SAFETY DATA
Stamford, Conn. 06904	SECTION I - IDENTIFICATION	
CHEMICAL NAME & SYNONYMS		

Silver Bearing Co	oper, 13 ounce	
CHEMICAL FAMILY	FORMULA	TRADE NAME
Copper		Alloy 114
DESCRIPTION		CAS NO.
Metal	$i \rightarrow i$	1

	SECTION II — NORMAL HANDLING PROCEDURES					
PRECAUTIONS TO BE TAKEN Avoid breathing	dust or fumes. Do not to	ake internally.				
,	,					
CORROSIVE ACTION ON MATE	RIALS (Metals, Plastic, Rubber, E	16')				
PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS				
Cieves (Dust) Goggle Other)S	As required to keep airborne concentrations below TLV.				

SECTION III - HAZARDOUS INGREDIENTS

	SASIC MATERIAL	APPROX.	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
	Copper		Dust 1.0 r Fume 0.1	ng/m ³ mg/m ³		Gastro-intestinal
L	••					

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not METHOD Applicable	OSHA CLASSIFICATION	FLAMMABLE EXPLOSIVE LIMITS	LOWER	UPPER			
EXTINGUISHING MEDIA							
Not Applicable							
SPECIAL FIRE HAZARD & PIRE FIGHTING PROCEDURES							
Not Applicable							

THRESHOLD LI	Copper, dust 1 mg/m ³ , Fume 0.2 mg/m ³ (ACGIH 1983)	
SYMPTOMS OF	Dust and fume, sneezing, congestion, metallic taste, gastro-intestinal distress, chills, fever	
	EMERGENCY FIRST-AID PROCEDURES	
SKIN	Flush thoroughly with water.	TRW-0071
EYES	Flush with water for 15 minutes, call a physician.	
INGESTION	Drink water, induce vomiting by sticking finger down throat, call a ph	nysician.
INHALATION	Remove victim to fresh air, call a physician.	0908-2081

EMERGENCY PHONE 1-800-OLIN-911

SECTION I - IDENTIFICATION

Red orange metallic se	Not assigned/mixture						
DESCRIPTION CAS NO.							
Copper	Copper Mixture Alloy 116						
CHEMICAL FAMILY	CHEMICAL FAMILY FORMULA TRADE NAME						
Silver Bearing Copper, 25 ounce							
Chemical name a synonyms							

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash hands with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS			
Eyes	Dust - goggles	As required to keep airborne			
Gloves	Impervious (if necessary)	concentrations of copper dust			
Other	NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occurs	• below TLV.			

SECTION III - HAZARDOUS INGREDIENTS

BASI	C MATERIAL		OSHA PEL	_ LD 50	LC 50	SIGNIFICANT EFFECTS
Co	opper	•	Dust 1 mg/m ³	TDLO 120 ug/kg (human)	No data	Inhalation - metal fume fever, respiratory tract irritation

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POIL	NT	OSHA CLASSIFICATION	PLANIMABLE	LOWER	UPPER			
METHOD	Not Applicable	Non-com	bustible solid	EXPLOSIVE LIMITS	N/A	N/A		
EXTINGUIS	EXTINGUISHING MEDIA							
Use extinguishing media suitable for surrounding material.								
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES Use NIOSH/MSHA approved positive pressure								
self-contained breathing apparatus when any material is involved in a fire.								

SECTION V. HEALTH HAZARD DATA

	SECTION V - HEALTH HAZARD DATA	•
THRESHOLD LIN	Copper dust 1 mg/m ³ , fume 0.2 mg/m ³ (ACGIH 1985-86)	
SYMPTOMS OF	Dust and fume - sneezing, congestion, metallic taste, nausea, chills, f	ever
Dust or Soar	tume: Wash with EMERGENCY FIRST AID PROCEDURES and water before eating or smoking. If an irritation develops, call a phy	sician.
EYES	Dust or fume: Flush with water for 15 minutes, call a physician.	
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician	TRW-00716
INHALATION	Dust or fume: Remove victim to fresh air, call a physician.	0908-2082

0908-2083



EMERGENCY PHONE (203) 356-2345

LAMMABILITY
0 REACTIVITY
$\langle 2 \times 0 \rangle$
HAZARO RATING
SPECIAL

MATERIAL SAFETY DATA

Corporation, 120 Long Ridge Ro	oad	•	SPECIAL		<i>O,</i>		.
nford, Conn. 06904		CTION I - ID	ENTIFICA	TION			
HEMICAL NAME & SYNONYMS	Y Di		ח				
Copper, deoxidized,	LOW PROS	Sphorous (DL	(P)	TRA	DE NAME		
Copper					Alloy 120		
SCRIPTION Motol				CAS	NO.	- · · · · · · - · · · · · · · · · · · ·	
Metal			_,				
SEC	CTION II -	- NORMAL H	ANDLING	PROCEDU	RES		
ECAUTIONS TO BE TAKEN IN H. Avoid breathing dus	ANDLING AN	NO STORAGE S. Do not ta	ke internal	llv.			
							i
RROSIVE ACTION ON MATERIA	LS (Metals, PI	astic, Rubber, Etc	L)				
OTECTIVE EQUIPMENT			VENTILATI	ON REQUIRER	aents		
(Dust) Goggles					keep airbor		
loves ther			conc	entrations	below TLV.		
			<u> </u>				
			<u> </u>				الــــــــــــــــــــــــــــــــــــ
	SECTION	ı III – HAZAI	RDOUS INC	GREDIENT	S		
BASIC MATERIAL	APPROX.	OSHA PEL	LD 50	LC 50	SIGNI	FICANT EFF	ECTS
_	T	Dust 1.0 r					
Copper	 	Fume 0.1	mg/m²		Gastro	intestinal	
		<u> </u>					
	TION IV -	- FIRE AND	EXPLOSIO	N HAZARI	DATA		~~~~
LASH FOINT NOT SETHOO Applicable	OSHA CL	ASSIFICATION			FLAMMABLE	LOWER	UPPER
XTINGUISHING MEDIA					LIMITS	L	<u></u>
Not Applicable						<u> </u>	·
Not Applicable	GHTING PRO	OCEDURES					
	, 						
	SECTIO	ON V - HEAL	TH HAZA	RD DATA			
HRESHOLD LIMIT VALUE Copper, dust	: 1 mg/m ³	, Fume 0.2 r	ng/m³ (AC	GIH 1983)			
YMPTOMS OF OVER EXPOSURE		Dust and fun			ion, metalli	С	
taste, gastro		al distress, c					
KIN Flush thorou			I-AID PROCE	DONES	·	7	TRW-007
Flush with w	ater for	15 minutes, o	call a physi	ician.			144 44 -00 /
Drink water	induce v	omiting by s	ticking fin	ger down t	hroat, call	a physicia	 an.
NGESTION DITTIR WATER	, v			0 3. 33			

Remove victim to fresh air, call a physician.

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD SE

CARCINOGENIC Not kno

TD_{LO} Copper 120 mg kg (human)

MUTAGENIC

Not known to be carcinogenic Not known to be mutagenic

ACUTE DEPMAL LD 00

PRIMARY SKIN IRRITATION Dus

ritant

AGUTE INHALATION LC 89

Dust is irritating

PRINCIPAL ROUTES OF ASSORPTION

Inhalation of dust or fume

EFFECTE OF ACUTE EXPOSURE

Congestion, gastro-intestinal distress, chills, fever

EFFECTS OF CHRONIC EXPOSURE

May cause liver, kidney or spleen damage, anemia

SECTION VII - SPILL OR LEAKAGE PROCEDURES (Control Procedures)

Dust or fume - Wear NIOSH/MSHA approved dust and fume respirator. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134). Shovel or sweep up and place in an approved DOT container and seal. Wash all contaminated clothing before reuse.

WASTE DISPOSAL METHOD

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - REACTIVITY DATA

STABLE XUMSTABLE AT "C "F HAZAROUG POLYMERIZATION WILL NOT OCCUR X

CONDITIONS TO AVOID

Dust and fume - acetylene, chlorine

HAZAROOUS DECOMPOSITION PRODUCTS Copper fume

SECTION IX - PHYSICAL DATA

MELTING POINT 1949°F	VAPOR PRESSURE	VOLATILES
SOILING POINT	SOLUGILITY IN WATER Insol	uble EVAPORATION RATE
SPECIFIC GRAVITY(H20 =1)	914	VAPOR DENSITY(Air = 1)
DENSITY .323 pounds/m ³		

INFORMATION FURNISHED BY:

A. L. Gaudreau (203) 789-5434

DATE

September 4, 1984

Department of Environmental Hygiene and Toxicology

Olin CORPORATION

TRW-00718

120 Long Ridge Road, Stamford, Connecticut 06904 EMERGENCY PHONE (203) 356 - 2345



EMERGENCY PHONE (203) 356-2345

Olin Corporation, 120 Long Ridge Road Stamford, Conn. 06904

FLAMMABILITY HAZARD RATING

MATERIAL SAFETY DATA

C	F	\sim	rı	a	N	1	_	ı	n	F	N	T	1	F	ı	С.	Δ	т	'n	0	ı	١
3	•	•	, ,	v	17	1	_	ŧ	v	Ę	ľ	, ,	ı	Г	•	•	-			v	4	٦

CHEMICAL NAME & SYNONYM			
Silver Bearing Co	opper 16 oz	·	
CHEMICAL FAMILY	PORMULA	TRADE NAME	
Copper	<u> </u>	Alloy 129	
DESCRIPTION		CAS NO.	
Metal	1 · ·		

SECTION II - NORMAL HANDLING PROCEDURES

	me amin t	umes. Do	not take internally.	
•	•		•	
	•	•	•	•

CORROSIVI	E ACTION OF	N MATERIALS	(Metals, Plantic, Rubber, Etc.)

	rior or marchines imetal, right, mose,	
PROTECTIVE E	QUIPMENT	VENTILATION REQUIREMENTS
Glaves D	oust and fume - Goggles oust and fume - Impervious oust and fume - Coveralls and Impervious Boots	Local exhaust or general ventilation required as dictated by airborne concentrations.

SECTION III - HAZARDOUS INGREDIENTS

فيستا كالمراب والمراب والمراب والمراب والمراب						
BASIC MATERIAL		APPROX.	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	•		Dust 1 mg Fume 0.1	/m ³ mg/m ³		Gastro-intestinal
Arsenic		.012	0.01 mg/r	7.8 g/kg		Gastro-intestinal, cancer
Antimony		.003	0.5 mg/m	LDLO	rat)	Resh, mucous membrane pneumoconiosis

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT NOT METHOD Applicable	OSHA CLASSIFICATION	FLAMMABLE EXPLOSIVE LIMITS	LOWER	UPPER
EXTINGUISHING MEDIA				
Not Applicable			•	
SPECIAL FIRE HAZARO & FIRE F	IGHTING PROCEDURES USE N	OSH/MSHA approved sel	f-containe	ed
breathing apparatu	is where this material is invol	ved in a fire.		

THRESHOLD LI	None established.		
SYMPTOMS OF	Dust and Iume - sneezing, congestion, gastro-intestinal distress, fever, chills.	, metallic tas	ite,
SKIN	EMERGENCY FIRST-AID PROCEDURES Flush thoroughly with water.		
EYES	Flush with water for 15 minutes, call a physician.		
INGESTION	Drink water, induce vomiting by sticking finger down th	roat, call a p	hysician.
INHALATION	Remove victim to fresh air, call a physician.	on 2085	TRW-001

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS ZHC Copper; Zi	rconium High Copper Alloy	,
CHEMICAL FAMILY	FORMULA	TRADE NAME
Соррег	Mixture	Alloy 151
DESCRIPTION		CAS NO.
Metal	<i>l</i> ;	Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIV	E EQUIPMENT	VENTILATION REQUIREMENTS
Eyes Gloves Other	Dust - Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below TLV for copper and zirconium.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL			OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	•	Dust Fume	1 mg/m ³ 0.1 mg/m ³	TD _{LO} 120 ug/kg (human)	No data	Metal fume fever, respiratory irritation.
Zirconium			5 mg/m ³	No data	No data	Presents no hazard because 0.2% maximum of alloy.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT		OSHA CLASSIFICATION	FLAMMABLE	LOWER	UPPER
METHOD			N/A	A N/A	
	Not applicable Non-combustible solid Non-combustible - Choose extinguishing media suitable for surrounding materials. CIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES Use NIOSH/MSHA approved self-contained				
SPECIAL F	IRE HAZARD & FIRE FIGHT	Use NIOSH/MSHA where this material is involved in a fire	approved sel	f-contain	ed

			•
THRESHOLD LIN	Zirconium - 5 mg/m ³ TWA, 10 mg/m ³ STEL ACGIH 1985-86).	mg/m ³ ;	;
SYMPTOMS OF	Dust and fume - Sneezing, congestion, metallic to chills.	aste, nausea,	0, 0
Dust or :	ume: Wash with EMERGENCY FIRST-AID PROCEDURES		1 2
SKIN	soap and water before eating or smoking. If an irritation develops,	call a physician.	Rica
EYES	Dust or fume: Flush thoroughly with water for 15 minutes. Call a	physician	
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	0908-20)86
INHALATION	Dust or Fume: Remove victim to fresh air. Call a physician.	TRW-00720	



MATERIAL SAFETY DATA

EMERGENCY PHONE 1-800-OLIN-911

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS			
HSM Copper		_	
CHEMICAL FAMILY	FORMULA		TRADE NAME
Copper		Mixture	Alloy 194
DESCRIPTION			CAS NO.
Metal	$I \rightarrow$		Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume.

Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS			
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occurs	As required to keep airborne concentrations of copper and iron below TLV.			

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL		OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	•	Dust 1 mg/m ³	TD _{LO} 120 ug/kg (human)	No data	Inhalation - metal fume fever, respiratory tract irritation
Iron		Fume 10 mg/m ³	No data	No data	Accumulation of dust in lung (siderosis)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	OSHA CLASSIFICATION		LOWER	UPPER
METHOD Not applicable	Non-combustible solid	EXPLOSIVE LIMITS	N/A	N/A_
EXTINGUISHING MEDIA Use extinguishing media	edia suitable for surrounding mater	rials.		
SPECIAL FIRE HAZARD & FIRE FIGHTI	NG PROCEDURES Use NIOSH/M ming apparatus when any material i	ISHA approved pos	itive pres e.	sure

THRESHOLD LIN	None established for mixture. (Copper; dust - 1 mg/m 0.2 mg/m ³ , Iron oxide fume - 5/mg/m ³ (ACGIH 1985-86)	n ³ , fume
SYMPTOMS OF	Dust and fume - Sneezing, congestion, metallic taste, nausea, chills, fey	j j
	or fume: Wash with EMERGENCY FIRST-AID PROCEDURES and water before eating or smoking. If an irritation develops, call a physic	1
EYES	Dust or fume: Flush thoroughly with water for 15 minutes. Call a physical	ician.
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	0908-2087
INHALATION	Dust or Fume: Remove victim to fresh air. Call a physician.	TRW-00721



EMERGENCY PHONE 1-800-OLIN-911

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS						
Strescon •						
CHEMICAL FAMILY	FORMULA	TRADE NAME				
*Copper	Mixture	Alloy 195				
DESCRIPTION CAS NO.						
Red orange metallic soli	id / :	Not assigned				

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash hands with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIV	EEQUIPMENT	VENTILATION REQUIREMENTS
Eyes Gloves Other	Dust - goggles Impervious (if necessary) NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occurs	As required to keep airborne concentrations of copper and iron below TLV.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust 1 mg/m ³	TD _{LO} 120 ug/kg (human)	No data	Inhalation - metal fume fever, respiratory tract irritation
Iron	Fume 10 mg/m ³	No data	No data	Accumulation of dust in lungs (siderosis)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	Not	OSHA CLASSIFICATION		EXPLOSIVE	LOWER	UPPER		
METHOD	Applicable	Non-cor	nbustible solid	LIMITS	N/A	N/A		
EXTINGUISHING	EXTINGUISHING MEDIA							
· Use	extinguishing m	edia suitable for s	urrounding material					
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES Use NIOSH/MSHA approved self-contained								
breathing apparatus where this material is involved in a fire.								
·								

		•
THRESHOLD LIM	Copper dust I mg/m , I dire via mg/m ,	
_	Iron fume 5 mg/m ³ (ACGIH 1985-86)	
SYMPTOMS OF O	VER EXPOSURE	
	Dust and fume - sneezing, congestion, metallic taste, nausea, chills,	fever
Dust o	r fume: Wash with EMERGENCY FIRST-AID PROCEDURES	
	nd water before eating or smoking. If an irritation develops, call a phys	ician.
EYES	Dust or fume: Flush with water for 15 minutes, call a physician.	_
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	TRW-00722
INHALATION	Dust or fume: Remove victim to fresh air, call a physician.	0908-2088



EMERGENCY PHONE 1-800-OLIN-911

SECTION I - IDENTIFICATION -

CHEMICAL NAME & SYNONYMS			
Copper Alloy			
CHEMICAL FAMILY	FORMULA		TRADE NAME
Copper		Mixture	Alloy 197
DESCRIPTION	CAS NO.		
Red orange meta	illic solid		Not assigned/mixture

SECTION 11 - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash hands with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS	
Eyes Gloves Other	Dust - goggles Impervious (if necessary) NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occurs	As required to keep airborne concentrations of copper dust below TLV.	

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust 1 mg/m ³	TDLO 120 ug/kg (human)	No data	Inhalation - metal fume fever, respiratory tract irritation

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT		OSHA CLASSIFICATION		FLAMMABLE	LOWER	UPPER
METHOD	Not Applicable	Non-comb	ustible solid	EXPLOSIVE LIMITS	N/A	N/A
EXTINGUISHI U		edia suitable for sur	rounding material.			
SPECIAL FIRE	HAZARD & FIRE FIGHTI	NG PROCEDURES	Use NIOSH/MSHA	approved pos	itive pres	sure
se	elf-contained breat	hing apparatus when	any material is invo	lved in a fir	е	

SECTION V - HEALTH HAZARD DATA

	SECTION V- TEACHT TIAZARD DATA	
THRESHOLD LIN	Copper dust 1 mg/m ³ , fume 0.2 mg/m ³ (ACGIH 1985-86)	
SYMPTOMS OF	Dust and fume - sneezing, congestion, metallic taste, nausea, chills, fev	er
	fume: Wash with EMERGENCY FIRST-AID PROCEDURES I water before eating or smoking. If an irritation develops, call a physician.	
EYES	Dust or fume: Flush with water for 15 minutes, call a physician.	1 1
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	0908-2089
INHALATION	Dust or fume: Remove victim to fresh air, call a physician.	TRW-007

00723

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS Gilding Copper,	9596		
CHEMICAL FAMILY	FORMULA	Mixture	TRADE NAME
Copper	mixture		Alloy 210
DESCRIPTION			CAS NO.
Metal	<i>j i</i>		Not assigned/mixture

SECTION 11 - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Precautions needed for abrasive, melting or other operations generating a dust or fume.
Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash
thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE	EQUIPMENT	VENTILATION REQUIREMENTS
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below TLV for copper and zinc.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust 1 mg, Fume 0.1 mg/m ³	m ³ TD _{LO} 120 ug/kg (human)	No data	Metal fume fever, respiratory irritation
Zine	Fume 5 mg/m ³	No data	TCLO 124 mg/m 50 min. (human)	Metal fume fever

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	OSHA CLASSIFICATION	FLAMMABLE	LOWER	UPPER
METHOD Not Applicable	Non-combustible solid	EXPLOSIVE LIMITS	N/A	N/A
Use extinguishing media	edia suitable for surrounding materials.			
SPECIAL FIRE HAZARD & FIRE FIGHTI self-contained brea	NG PROCEDURES Use NIOSH/MSH thing apparatus when any material is in	A approved volved in a fi	positive re.	pressure

THRESHOL	None established for mixture (copper fume 0.2 mg/m ³ 5 mg/m ³ ACGIH 1985-86).	, zinc fume
	OF OVER EXPOSURE Dust and fume - sneezing, congestion, metallic taste, nausea, chills, fever	er.
	Dust or fume: Wash with EMERGENCY FIRST AID PROCEDURES soap and water before eating or smoking. If an irritation develops, call a physic	cian.
EYES	Dust or fume: Flush thoroughly with water for 15 minutes. Call a physic	cian.
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	TRW-007
INHALATIO	Dust or Fume: Remove victim to fresh air. Call a physician.	11644-004

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS		
Commercial bro	nze	
CHEMICAL FAMILY	FORMULA	TRADE NAME
Copper	Mixture	Alloy 220
DESCRIPTION		CAS NO.
Metal		Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS		
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below TLV for copper and zinc.		

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust 1 mg/mg/mg/mg/mg/mg/mg/mg/mg/mg/mg/mg/mg/m	n ³ TD _{LO} 120 ug/kg (human)	No data	Metal fume fever, respiratory irritation
Zine	Fume 5 mg/m ³	No data	TCLO 124 mg/m ³ 50 min. (human)	Metal fume fever

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH PO	DINT	OSHA CLASSIFICATION	1		FLAMMABLE	LOWER	UPPER
METHOD	Not Applicable	Non-com	<u>bustibl</u>	e solid	EXPLOSIVE LIMITS	N/A	N/A
EXTINGUI	SHING MEDIA						
	Use extinguishing me	edia suitable for su	irround	ing materials.			_
SPECIAL	FIRE HAZARD & FIRE FIGHTI			NIOSH/MSHA	approved	positive	pressure
	self-contained breat	hing appearatus wh					-

THRESHOLD	LIMIT VALUE	None established for mixture (copper fume 0.2 mg/m ³ , zinc fume
	5 mg/m ³ ACG	[H 1984).
SYMPTOMS	OF OVER EXPOSURE	
	Dust and fume	- sneezing, congestion, metallic taste, nausea, chills, fever.
		with <u>emergency first-aid procedures</u> e eating or smoking. If an irritation develops, call a physician.
SKIN S	oap and water before	e eating of smoking. It an itritation develops, can a physician.
EYES	Dust or fume:	Flush thoroughly with water for 15 minutes. Call a physician.
INGESTION	Dust: Not a li	kely route of exposure. If ingested, call a physician.
INHALATION	Dust or Fume:	Remove victim to fresh air. Call a physician. TRW-00725

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50	No data for alloy	CARCINOGENICITY MUTAGENICITY	Not known to be carcinogenic Not known to be mutagenic	e
ACUTE DERMAL LD 50	No data for alloy	EYE IRRITATION	Dust is irritating	
ACUTE INHALATION LC 50	No data for alloy	PRIMARY SKIN IRRITA	ATION Dust may be an in	ritant
PRINCIPAL ROUTES OF ABSO	RPTION			
Inhalation of dust	or fume			
EFFECTS OF ACUTE EXPOSU Metal fume fever	ne (chills, fever, nausea),	respiratory irritat	ion	
effects of chronic expo overexposure may	sume None expected cause kidney and liver		ndustrial use conditions. Chr	onic

SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

ACTION FOR MATERIAL RELEASE OR SPILL

Dust or Fume: Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill, use the emergency telephone number shown on the front of this sheet.

TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

WASTE DISPOSAL METHOD

Dispose of contaminated product, empty containers and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - SHIPPING DATA

D.O.T. CL	ASS	N	ot regula	ited		
			SECTI	ON IX - REA	CTIVITY DATA	
STABLE	X UNSTABLE	AT	°c	o _F	HAZARDOUS	MAY OCCUR
			POLYMERIZATION	WILL NOT OCCUR X		
CONDITIO	NS TO AVOID	Presence	of carbo	on monoxide	e during melting	
		Avoid (C	lust and f	'ume) acety	lene, chlorine	
INCOMPA1	TIBILITY (Material to	,		. •	•	

SECTION X - PHYSICAL DATA

MELTING POINT	1870°F	VAPOR PRESSURE	N/A	VOLATILES	NI/A
SOILING POINT	No data	SOLUBILITY IN WATER	Insoluble	EVAPORATION RATE	NI/A
SPECIFIC GRAVITY		PH N/A		VAPOR DENSITY (Air = 1)	N/A
*DENSITY	0.318 lbs./in ³				14711

INFORMATION FURNISHED BY:

Environmental Hygiene and Toxicology

(203) 789-5436

DATE

March 31, 1986

TRW-00726

Department of Environmental Hygiene and Toxicology (203) 789-5436

Olin CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904

OCEAN® Network

EMERGENCY PHONE 1-800-OLIN-911

MATERIAL SAFETY DATA

EMERGENCY PHONE 1-800-OLIN-911

CHEMICAL NAME & SYNONYMS			
Red Brass, 85%			
CHEMICAL FAMILY	FORMULA		TRADE NAME
Copper	1	Mixture	Alloy 230
DESCRIPTION	· · ·		CAS NO.
Metal	,		Not assigned/mixture

SECTION I - IDENTIFICATION -

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below TLV for copper and zinc.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL		OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	•	Dust 1 mg/i Fume 0.1 mg/m ³	n ³ TD _{LO} 120 ug/kg (human)	No data	Metal fume fever, respiratory irritation
Zine		Fume 3 mg/m ³	No data	TCLO 124 mg/m ³ 50 min. (human)	Metal fume fever

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	OSHA CLASSIFICATION	OSHA CLASSIFICATION		FLAMMABLE	LOWER	UPPER	
METHOD Not Applicable	Non-com	bustibl	e solid	EXPLOSIVE LIMITS	N/A	N/A	
EXTINGUISHING MEDIA				-			
Use extinguishing r	nedia suitable for su	urround	ing materials.				
SPECIAL FIRE HAZARD & FIRE FIGH			NIOSH/MSHA	approved	positive	pressure	
self-contained brea						•	

THRESHOLD LIN	Notic established for mixture (copper rume ora mg/	m ³ , zinc fume
	5 mg/m ³ ACGIH 1984).	
SYMPTOMS OF	VER EXPOSURE	
	Dust and fume - sneezing, congestion, metallic taste, nausea, chills, for	ever.
	or fume: Wash with EMERGENCY FIRST-AID PROCEDURES	
SKIN SOAP	and water before eating or smoking. If an irritation develops, call a phy	sician.
EYES	Dust or fume: Flush with water for 15 minutes. Call a physician.	1
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	0908-2093
INHALATION	Dust or Fume: Remove victim to fresh air. Call a physician.	TRW-0072

SECTION I - IDENTIFICATION ...

CHEMICAL NAME & SYNONYMS		
Low Brass		
CHEMICAL FAMILY	FORMULA	TRADE NAME
Copper	Mixture	Alloy 240
DESCRIPTION		CAS NO.
Metal	i ·	Not assigned/Mixture

SECTION 11 - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Precautions needed for abrasive, melting or other operations generating a dust or fume.

Do not get dust or fume in eyes, on skin, or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below TLV for copper and zinc.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL		OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust Fume		TD _{LO} = 120 ug/kg (human)	No data	Metal fume fever, respiratory irritation
Zine	Fume	5 mg/m ³	No data	TC _{LO} 124 mg/m 50 min (human)	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT		OSHA CLASSIFICATION	FLAMMABLE	LOWER	UPPER
METHOD	THOD Not Applicable Non-combustibe solid		EXPLOSIVE LIMITS	N/A	N/A
EXTINGUISHIN	IG MEDIA				
Use	e extinguishing me	edia suitable for surrounding materials	S		
SPECIAL FIRE	HAZARD & FIRE FIGHTI	NG PROCEDURES USE NIOSH/MSH	A approved pos	tive pres	sure
seli	f-contained breatl	ning apparatus when any material is in	volved in a fire		

SECTION V - HEALTH HAZARD DATA

		•
THRESHOLD LIN	5 mg/m ³ , ACGIH 1985-86).	zinc fume
SYMPTOMS OF	OVER EXPOSURE	
	Dust and fume - sneezing, congestion, metallic taste, nausea, chills, fever	.
Di	ust or fume: Wash with EMERGENCY FIRST-AID PROCEDURES	
SKIN	soap and water before eating or smoking. If an irritation develops, call a	physician.
EYES	Dust or fume: Flush thoroughly with water for 15 minutes, call a physicia	
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	0908-2094
100 A T 100	Dust or fume: Remove victim to fresh air, call a physician.	TRW-00728

INHALATION

EMERGENCY PHONE 1-800-OLIN-911

SECTION 1 - IDENTIFICATION -

CHEMICAL NAME & SYNONYMS Yellow brass, cartridge	brass	
CHEMICAL FAMILY Copper	FORMULA Mixture	TRADE NAME Alloy 260
DESCRIPTION Metal	i	Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

INHALATION

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below TLV for copper and zinc.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL		OSHA Pel	LD_50	LC 50	SIGNIFICANT EFFECTS
Copper	•	Dust 1 mg/m ³ Fume	TDLO 120 ug/kg (human)	No data	Metal fume fever, respiratory irritation
Zine		0.1 mg/m ³ Fume 5 mg/m ³	No data	TC _{LO3} 124 mg/m ³ /50 min. (huma	Metal fume fever n)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POIN		OSHA CLASSIFICATION			FLAMMABLE	LOWER	UPPER
METHOD N	Not Applicable	Non-combustible solid			EXPLOSIVE	N/A	N/A
EXTINGUISHING MEDIA							
Use extinguishing media suitable for surrounding materials.							
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES			Use	NIOSH/MSHA	approved	positive	pressure
self-contained breathing apparatus when any material is involved in a fire.							

SECTION V - HEALTH HAZARD DATA

THRESHOL	None established for mixture (copper fume 0.2 mg/m ³ , zinc 5 mg/m ³ ACGIH 1985-86).	fume
SYMPTOMS	OF OVER EXPOSURE	
	Dust and fume - sneezing, congestion, metallic taste, nausea, chills, fever.	
SKIN	Dust or fume: Wash with EMERGENCY FIRST-AID PROCEDURES soap and water before eating or smoking. If an irritation develops, call a physician	
EYES	Dust or fume: Flush with water for 15 minutes. Call a physician.	0908-2093
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	1 1

Dust or Fume: Remove victim to fresh air. Call a physician.

TRW-00729

0908-2096



INHALATION

EMERGENCY PHONE (203) 356-2345

Olin Corporation, 120 Long Ridge Road Stamford Conn. 06904



MATERIAL SAFETY DATA

	SYNONYME							Į
Yellow b	rass							
HEMICAL FAMILY		POR	MULA		TRADE			
Copper						loy 262		
ESCRIPTION		i	į		CAS NO			
Metal								
,	SEC	TION II -	NORMAL	HANDLING	PROCEDUR	ES		
RECAUTIONS TO B	TAKEN IN HA	NOLING AN	DSTORAGE	ake internall			· · · · · · · · · · · · · · · · · · ·	
***************************************			<i>.</i>		•			
		•						
•								•
		·	<u>, </u>					<u> </u>
RROSIVE ACTION	ON MATERIAL	S (Metale, Pl	stie, Rubber, E	pe-)				
OTECTIVE EQUIP	MENT			VENTILATIO	N REQUIREME	NTS		
Dust	goggles			As rec	uired to ke	ep airhorr	ne	
leves	9-00-00				ntrations of			•
ther	•			below				
	•			1				
		SECTION	III — HAZA	RDOUS ING	REDIENTS			
BASIC MATE	RIAL	APPROX.	osha Pel	LD 50	LC 50	SIGNI	FICANT EFF	ICTS
			Dust 1 mg	/m ³				
Copper	-		Fume 0.1			Gastro-i	ntestinal	
		ĺ	Fume	LDLO	TCLO			
Zinc			5 mg/m ³	500 mg/kg		Metal fu	me fever	
				(human)	(human)	i		
		<u></u>						
	Not	بالتسويد سوية		EXPLOSION			LOWER	UPPER
Lash Point Ethod A	pplicable	OSHA CL	S IFICATION		TE:	Lammable XPLOSIVE	LOWER	OPPER
TINGUISHING ME		ــــــــــــــــــــــــــــــــــــــ				MITS		
Not Appl							•	
PECIAL FIRE HAZA		HTING PRO	CEDURES					
Not Appl								
		SECTIO	N V – HEA	LTH HAZAR	D DATA			•
HRESHOLD LIMIT N	VALUE one establis					· ·		·
YMPTOMS OF OVE D				tion, metalli		sea, chills	s, fever	
KIN F	ush thoroug			ST-AID PROCED	URES		- 1715	
F1	ush with we	ter for 1	5 minutes,	call a physic	ian.		IK/	<i>W</i> -0073
	rink water.	induce vo	miting by s	ticking finge	er down thro	at. call a	physician	
NOESTION				rescuil mile			-	



EMERGENCY PHONE (203) 356-2345

MATERIAL SAFETY DATA

Olin Corporation,	120 Long Ridge	Road
Stamford, Conn.	06904	SEC

amford, Conn. 06904	SECTION I - IDENTIFICATIO
HEMICAL NAME & SYNONYMS	

CHEMICAL NAME & SYNONYMS Medium Leaded B			
CHEMICAL FAMILY Copper	FORMULA	Alloy 350	
DESCRIPTION Metal	<i>i</i> .	CAS NO.	

SECTION II —	NORMAL HANDLING PROCEDURES
PRECAUTIONS TO SE TAKEN IN HANDLING AND AVOID breathing dust or fumes	Do not take internally.
	·
·	
, , , , , , , , , , , , , , , , , , ,	
CORROSIVE ACTION ON MATERIALS (Metals, Place	rcie, Rubber, Ess.)
PROTECTIVE EQUIPMENT	VENTILATION REQUIREMENTS
Even Dust - goggles	Local exhaust or general ventilation
Gloves	required as dictated by airborne
Other ·	concentrations.
	·

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROX.	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper		Dust 1 mg/ Fume 0.1 r	ng/m ³		Gastro-intestinal
Zine		Fume 5 mg/m ³	mg/m^3 hum	an	Metal fume fever
Lead	0.8-1.4	0.05 mg/m	TDLO 450 mg/m ³ h	uman	central nervous system, fetal damage

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT NOT METHOD Applicable	OSHA CLASSIFICATION		FLAMMABLE EXPLOSIVE LIMITS	LOWER	UPPER
EXTINGUISHING MEDIA Not Applicable		-			
SPECIAL FIRE HAZARD & FIRE P breathing apparati		Use NIOSH/MSHA a l is involved in a fire.	pproved sell	-containe	ed

THRESHOLD LI	None established.	
SYMPTOMS OF	Dust and fume - sneezing, congestion, metallic taste, chills, nau	sea, fever.
\$KIN	Flush thoroughly with water.	
EYES	Flush with water for 15 minutes, call a physician.	TRW-0073
INGESTION	Drink water, induce vomiting by sticking finger down throat, cal	l a physician.
INHALATION	Remove victim to fresh air, call a physician.	- 0908-2097



EMERGENCY PHONE (203) 358-2345

FLAMMABILITY REACTIVITY

MATERIAL SAFETY DATA

Ann corporation, 150 Folia Hoda Hota	-
tamford, Connecticut 06904	SECTION I - IDENTIFICATION

	0-300000		
CHEMICAL NAME & SYNONYMS			
High Leaded Brass	3		
CHEMICAL FAMILY	FORMULA	TRANS DART	
Copper		Alloy 353	
DESCRIPTION	· · · · · · · · · · · · · · · · · · ·	CAS NO.	
Metal	, , , , , , , , , , , , , , , , , , ,		

CHAL HANDLING PROCEDURES
nade o not take internally.
ubber, Ets.)
VENTILATION REQUIREMENTS
Local exhaust or general ventilation required as dictated by airborne concentrations.

SECTION III - HAZARDOUS INGREDIENTS

SASIC MATERIAL	APPROX.	CSHA PEL	LO 50	LC 50	SIGNIFICANT EFFECTS
Copper		Dust 1 mg/ Fume 0.1 r	m ³ ng/m ³		Gastro-intestinal
Zine		Fume 5 mg/m ³	LD _{LO} 500 mg/m ³ hum	an	Metal fume fever
Lead	1.3-2.3	0.05 mg/m	$\frac{\text{TD}_{LO}}{3} \frac{450}{\text{mg/m}^3}$	uman	Central nervous system, fetal damage

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH FOINT NOT METHOO Applicable	OBHA CLASSIFICATION	FLAMMABLE EXPLOSIVE LIMITS	LOWER	UPPER
Extinguishing media Not Applicable		•		
SPECIAL FIRE HAZARO & FIRE FIGHTING PROCEDURES USE NIOSH/MSHA approved self-contained breathing apparatus where this material is involved in a fire.				

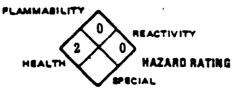
THRESHOLD LII	MIT VALUE None established.	
SYMPTOMS OF	OVER EXPOSURE Dust and fume - sneezing, congestion, metallic taste, chills, nausea, feve	er.
SKIN	EMERGENCY FIRST-AIO PROCEDURES Flush thoroughly with water.	
EYES	Flush with water for 15 minutes, call a physician.	
INGESTION	Drink water, induce vomiting by sticking finger down throat, call a physi	cian.
INHALATION	Remove victim to fresh air, call a physician.	TRW-0



EMERGENCY PHONE (203) 356-2345

Olin Corporation, 120 Long Ridge Road

Stamford, Conn. 06904



MATERIAL SAFETY DATA

SECTION I -	IDENTIFICATION
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CHEMICAL NAME & SYNONYMS High Conductivity Bronze						
CHEMICAL FAMILY FORMULA Copper	Alloy 405					
DESCRIPTION Metal	CAS NO.					

SECTION II -	- NORMAL HANDLING PROCEDURES	
PRECAUTIONS TO SE TAKEN IN HANDLING AN Avoid breathing dust or lumes	s. Do not take internally.	
j		
į .		
•		
	,	
CORROSIVE ACTION ON MATERIALS (Metals, PI	astic, Rubber, Etc.)	
PROTECTIVE EQUIPMENT	VENTILATION REQUIREMENTS	
Eves Dust - goggles	As required to keep airborne	
concentrations of copper dust		
outer below TLV.		
1		
	· ·	

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROX.	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper		Dust 1 mg Fume 0.1	/m ³ mg/m ³		Gastro-intestinal
Zine		Fume 5 mg/m ³	LD _{LO} 500 mg/kg	TCLO 600 mg/m ³	
Cobalt		Dust 2 mg/m ³	human	human	Mucous membrane irritation

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT NOT METHOD Applicable	OSHA CLASSIFICATION	FLAMMABLE LOWER UPPER TEXPLOSIVE
Extinguishing media Not Applicable		
SPECIAL FIRE HAZARD & FIRE Not Applicable	FIGHTING PROCEDURES	

	SECTION V - HEACHI MAZARO DATA	
THRESHOLD LI	None established.	
SYMPTOMS OF	Dust and fume - sneezing, congestion, metalli gastro-intestinal distress, chills, fever	c taste,
S KIN	EMERGENCY FIRST-AID PROCEDURES Flush thoroughly with water.	
EYES	Flush with water for 15 minutes, call a physician.	TRW-00733
INGESTION	Drink water, induce vomiting by sticking finger down throat, call	a physician.
INHALATION	Remove victim to fresh air, call a physician.	- 2000
		0008-2099

OCEANSM Network EMERGENCY PHONE (203) 356-2345 HEA

PALTH 2 0 REACTIVITY HAZARD F

MATERIAL SAFETY DATA

Olin Corporation, 120 Long Ridge Road Stamford, Connecticut 06904

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3		_		-	IMEL	117			v	

FLAMMABILITY

·	360110111 - 1861111	HOMITON	
CHEMICAL NAME & SYNONYME			
Lubaloy			
CHEMICAL FAMILY	FORMULA	TRADE NAME	
Copper		Alloy 411	
DESCRIPTION		CAS NO.	
Metal			

SECTION II —	NORMAL HANDLING PROCEDURES
PRECAUTIONS TO SE TAKEN IN HANDLING AND Avoid breathing dust or fumes.	Do not take internally.
·	,
CORROSIVE ACTION ON MATERIALS (Metals, Plan	rdc, Aubber, Evs.)
PROTECTIVE EQUIPMENT	VENTILATION REQUIREMENTS
Eyes Dust - goggles Gloves Other	As required to keep airborne concentrations of copper dust below TLV.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROX.	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper		Dust 1 mg Fume 0.1	mg/m ³		Gastro-intestinal
Zine		Fume 5 mg/m ³	LD _{LO} 500 mg/kg	TCLO 600 mg/m	
Cobalt		Dust 2 mg/m ³	human	human	Mucous membrane irritation

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT NOT METHOD Applicable	OSHA CLASSIFICATION	PLAMMABLE EXPLOSIVE LIMITS	LOWER	UPPER				
EXTINGUISHING MEDIA								
Not Applicable	Not Applicable .							
SPECIAL FIRE HAZARD & FIRE FIG	HTING PROCEDURES							
Not Applicable								

THRESHOLD LI	MIT VALUE None established.	
SYMPTOMS OF	Dust and fume - sneezing, congestion, metallic taste, gastro-intestinal distress, chills, fever	
SKIN	EMERGENCY FIRST-AID PROCEDURES Flush thoroughly with water.	
tyts	Flush with water for 15 minutes, call a physician.	TRW-00734
INGESTION	Drink water, induce vomiting by sticking finger down throat, call a physic	ian.
INHALATION	Remove victim to fresh air, call a physician.	0908-210



EMERGENCY PHONE (203) 356-2345

Olin Corporation, 120 Long Ridge Road Stamford, Conn. 06904



MATERIAL SAFETY DATA

SECTION I -	IDENT	IFICA	TION
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CHEMICAL NAME & SYNONYMS			
Copper Alloy			
CHEMICAL FAMILY	FORMULA	TRADE NAME	
Copper		Alloy 413	
DESCRIPTION		CAS NO.	
Metal			

	SECTION II — I	NORMAL HANDLING PROCEDURES		
PRECAUTIONS TO SE TAKEN IN HANDLING AND STORAGE Avoid breathing dust or fumes. Do not take internally.				
	VE ACTION ON MATERIALS (Metals, Plast	ic, Rubber, Etc.)		
Eyes Gleves Other	Dust - goggles	As required to keep airborne concentrations of copper dust below TLV.		

SECTION III — HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROX.	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper		Dust 1 mg Fume 0.1	/m ³ mg/m ³		Gastro-intestinal
Zinc		Fume 5 mg/m ³	$rac{ ext{LD}_{ ext{LO}}}{ ext{500 mg/kg}}$	TCLO 600 mg/m ³	Metal fume fever
Cobalt		Dust 2 mg/m ³	human	human	Mucous membrane irritation

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT NOT METHOD Applicable	OSHA CLASSIFICATION	FLAMMABLE LOWER EXPLOSIVE LIMITS	UPPER
EXTINGUISHING MEDIA Not Applicable			
SPECIAL FIRE HAZARO & FIRE Not Applicable	FIGHTING PROCEDURES		

THRESHOLD LI	MIT VALUE None established.
SYMPTOMS OF	OVER EXPOSURE Dust and fume - sneezing, congestion, metallic taste, gastro-intestinal distress, chills, fever
	EMERGENCY FIRST-AID PROCEDURES
SKIN	Flush thoroughly with water.
EYES	Flush with water for 15 minutes, call a physician.
INGESTION	Drink water, induce vomiting by sticking finger down throat, call a physician.
INHALATION	Remove victim to fresh air, call a physician.

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 66

Not known to be carcinogenic

ACUTE ORAL TDLO Copper 120 mg/kg OUTE DEFINAL LD SO

(human)

CARCINOGENIC MUTAGENIC

Not known to be mutagenic

EVE INSITATION Dust is irritant

CUTTE INHALATION LC M

PRIMARY SKIN IRRITATION

Dust is irritant

GIPAL ROUTES OF ASSORPTION

Inhalation of dust or fume

OTTE OF ACUTE EXPOSURE

Congestion, gastro-intestinal distress, chills, fever, dermatitis

EPPRETS OF CHRONIC EXPOSURE

May cause liver, kidney or spleen damage, anemia, dermatitis

SECTION VII - SPILL OR LEAKAGE PROCEDURES (Control Procedures)

Dust or fume - Wear NIOSH/MSHA approved dust and fume respirator. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134). Shovel or sweep up and place in an approved DOT container and seal. Wash all contaminated clothing before reuse.

WASTE DISPOSAL METHOD

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - REACTIVITY DATA

MAY OCCUR STABLE HAZAGOOUS POLYMERIZATION WILL NOT OCCUR CONDITIONS TO AVOID Dust and fume - acetylene, chlorine INCOMPATABILITY (M

VAZAROOUS DECOMPOSITION PRODUCTS Copper fume, zinc oxide fume

SECTION IX - PHYSICAL DATA

MELTING POINT 1850°F	VAPOR PRESSURE	VOLATILES
BOILING FOINT	SOLUBILITY IN WATER Insoluble	EVAPORATION RATE
SPECIFIC GRAVITY(H2G=1)	pH	VAPOR DENSITY(Ab = 1)
DENSITY .318 pounds/m ³		

INFORMATION FURNISHED BY:

are A. L. Gaudreau (203) 789-5434

DATE

September 4, 1984

Department of Environmental Hygiene and Toxicology

LII CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904 **EMERGENCY PHONE (203) 356 - 2345**

TRW-00736

EMERGENCY PHONE (203) 356-2345

MATERIAL SAFETY DATA

Olin Corporation, 120 Long Ridge Road

Stamford, Connecticut 06904

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS Lubaloy X			
CHEMICAL FAMILY Copper	FORMULA	Alloy 425	
DESCRIPTION Metal	· · · · · · · · · · · · · · · · · · ·	CAS NO.	

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS AVO	to se taken in handling an old breathing dust or lumes	Do not take internally.	
		g. 40	
		,	
CORROSIVE A	CTION ON MATERIALS (Metals, Pla	etic, Rubber, Etc.)	
		etic, Rubber, Etc.) VENTILATION REQUIREMENTS	
PROTECTIVE		As required to keep airborne	
PROTECTIVE Eyes	EQUIPMENT	As required to keep airborne concentrations of copper dust	
PROTECTIVE	EQUIPMENT	As required to keep airborne	

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROX.	OEHA PEL	LD 80	LC 50	SIGNIFICANT EFFECTS
Copper		Dust I mg Fume 0.1	/m ³ mg/m ³		Gastro-intestinal
Zine		Fume 5 mg/m ³	LD _{LO} 500 mg/kg	TCLO 600 mg/m	Metal fume fever
Cobalt		2 mg/m ³	numan	human	Mucous membrane irritation

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH FOINT NOT METHOD Applicable	OEHA CLASSIFICATION	FLAMMASLE EXPLOSIVE LIMITS	LOWER	UPPER
EXTINGUISHING MEDIA Not Applicable			•	
SPECIAL FIRE HAZARD & FIRE Not Applicable	FIGHTING PROCEDURES			

THRESHOLD LI	None established.	
	Dust and fume - sneezing, congestion, metallic t gastro-intestinal distress, chills, fever	este,
SKIN	Flush thoroughly with water.	
EYES	Flush with water for 15 minutes, call a physician.	
INGESTION	Drink water, induce vomiting by sticking finger down throat, call a	physician.
INHALATION	Remove victim to fresh air, call a physician.	TRW-00

0908-2104



INGESTION

INHALATION

MATERIAL SAFETY DATA

amford, Connecticut 06904	SEC	CTION I - ID	ENTIFICAT	ION '			
HEMICAL NAME & SYNONYMS							
Lubronze	7-2-			12240	E NAME		
Copper	100	MULA			lloy 422		
ESCRIPTION		· · · · · · · · · · · · · · · · · · ·		CAS N			
Metal	•	i i			-		
		· · · · · · · · · · · · · · · · · · ·					
SEC	TION II -	- NORMAL H	IANDLING I	PROCEDUR	RES		
RECAUTIONS TO BE TAKEN IN HAI Avoid breathing dust	NDLING AN	O STORAGE	ka intarnall	··			
· Avoid oreatining dust	or lume	s. Do not ta	Ke Hiteritani	y•			
	•	•		1			
•							
		•					•
DRROSIVE ACTION ON MATERIAL	8 (Metals, Pl	estic, Rubber, Etc.	.)			•	
ROTECTIVE EQUIPMENT			VENTILATIO	N REQUIREM	NTS		
Dust - goggles				uired to ke			
Neves				ntrations o	f copper d	ust	
ther ·			below	TLV.			
			1	•			
BASIC MATERIAL	APPROX.	OSHA PEL	LO 50	LC 60	\$IGNII	FICANT EF	FECTS
Copper		Dust 1 mg/ Fume 0.1	mg/m ³		Gastro-i	ntestinal	l
Zinc	_	Fume	LD _{LO}	TCLO 600 mg/m	Motol	fume fev	A
Zilie		5 mg/m ³	500 mg/kg	human		membrar	
Cobalt		2 mg/m ³		, , a , i , a , a , a , a , a , a , a ,	irritatio		
			_	<u> </u>			
		FIRE AND	EXPLOSION				,
LASH POINT NOT SETHOO Applicable	OSHA CL	ASSIFICATION		N	LAMMABLE	LOWER	UPPER
XTINGUISHING MEDIA	<u> </u>				IMITS		٠
Not Applicable							
	HTING PRO	CEDURES					
PECIAL FIRE HAZARO & FIRE FIG							
PECIAL FIRE HAZARO & FIRE FIG	SECTIO	NIV UEAL	TU U 4 7 4 7	DDATA			
PECIAL FIRE HAZARO & FIRE FIG Not Applicable	SECTIO	N V – HEAL	TH HAZAR	D DATA			
PECIAL FIRE HAZARD & FIRE FIG		N V – HEAL	TH HAZAR	D DATA			
Not Applicable Not Applicable HRESHOLD LIMIT VALUE None establish WMPTOME OF OVER EXPOSURE	ned. Du	st and fume	- sneezing,		, metallic	taste,	
PECIAL FIRE HAZARO & FIRE FIG. Not Applicable THRESHOLD LIMIT VALUE	ned. Du nal distr	st and fume ess, chills, fe	- sneezing,	congestion	, metallic	taste,	
Not Applicable Not Applicable HRESHOLD LIMIT VALUE None establish WMPTOME OF OVER EXPOSURE	ned. Du nal distr	st and fume ess, chills, fe	- sneezing,	congestion	, metallic	taste,	TRW-0

Drink water, induce vomiting by sticking finger down throat, call a physician.

Remove victim to fresh air, call a physician.

SECTION 1 - IDENTIFICATION

CHEMICAL NAME & SYNONYMS			,	
Phosphor Bronze	1.25%			
CHEMICAL FAMILY	FORMULA		TRADE NAME	
Copper		Mixture	Alloy 505	
DESCRIPTION			CAS NO.	
Metal	i		Not assigned/Mixture	

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin, or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS		
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below TLV for copper and tin.		

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	•	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
 Copper	Dust Fume	1 mg/m ³ 0.1 mg/m ³	TDLO= 120 ug/kg (human)	No data	Inhalation - metal fume fever, respiratory tract irritation
Tin	Dust	2 mg/m ³	No data	No data	Mucous membrane irritation, accumulation of dust in lung (pneumoconiosis)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	OSHA CLASSIFICATION		FLAMMABLE	LOWER	UPPER		
METHOD	Not Applicable	Non-comb	oustibe solid	EXPLOSIVE LIMITS	N/A N/A		
EXTINGUISHING	-						
Use	e extinguishing m	edia suitable for sui	rrounding materia	ıls.			
SPECIAL FIRE	iazard & fire fightii	NG PROCEDURES	Use NIOSH/MS	HA approved pos	sitive pre	ssure	
sel	f-contained breat	hing apparatus whe					

THRESHOLD L		
	None established for mixture (copper fume 0.2 mg/m ³ , tin 2 mg/m ³ , ACG	IH 1985-86).
SYMPTOMS OF	OVER EXPOSURE	•
	Dust and fume - sneezing, congestion, metallic taste, nausea, chills,	rever
SKIN	Dust or fume: Wash with EMERGENCY FIRST-AID PROCEDURES soap and water before eating or smoking. If an irritation develops, constants	all a physician.
EYES	Dust or fume: Flush thoroughly with water for 15 minutes, call a phy	sician.
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	
INHALATION	Dust or fume: Remove victim to fresh air, call a physician.	TRW-0073

EMERGENCY PHONE 1-800-OLIN-911

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS Phosphor Bronze 5% A			
CHEMICAL FAMILY Copper	FORMULA	Mixture	TRADE NAME Alloy 510
DESCRIPTION Metal	7		Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVI	EQUIPMENT	VENTILATION REQUIREMENTS
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below TLV for copper and tin.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust 1 mg/m ³	$TD_{LO} = 120 \text{ ug/kg}$ (human)	No data	Dust or fume: metal fume fever, respiratory irritation
Tin	Fume 0.1 mg/m ³ Dust 2 mg/m ³	No data	No data	Mucous membrane irritation, accumulation of dust in lung

SECTION IV - FIRE AND EXPLOSION HAZARD DATA (pneumoconiosis)

FLASH POINT		OSHA CLASSIFICATION	FLAMMABLE	N/A	UPPER
METHOD	Not applicable	Non-combustible solid	EXPLOSIVE		N/A
EXTINGUISHI U		edia suitable for surrounding ma			
	HAZARD & FIRE FIGHTIFE CONTAINED breat	ic PROCEDURES Use NIOSI hing apparatus when any materi	H/MSHA approved po ial is involved in a fi		ssure

THRESHOLD LII	wit value one established for mixture (copper fume 0.2 mg/m^3 , tin 2 mg/m^3 ACGIH:	1985-86).
	OVER EXPOSURE Dust and fume - sneezing, congestion, metallic taste, nausea	
	st or fume: Wash with EMERGENCY FIRST-AID PROCEDURES up and water before eating or smoking. If an irritation develops, call a physical state of the	sician.
EYES	Dust or fume: Flush with water for 15 minutes. Call a physician.	
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	TRW-0074
INHALATION	Dust or Fume: Remove victim to fresh air. Call a physician.	



EMERGENCY PHONE (203) 356-2345

Olin Corporation, 120 Long Ridge Road

HEALTH 2 0 REACTIVITY
HEALTH SPECIAL

MATERIAL SAFETY DATA

in Corporation, 120 Long Ridge Road	•
amford, Conn. 06904	SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS					
Phosphor Bronze	Phosphor Bronze				
CHEMICAL FAMILY	FORMULA	TRADE NAME			
Copper		Alloy 511			
DESCRIPTION	<i>I</i> :	CAS NO.			
Metal	, ;				

SECTION II - NORMAL HANDLING PROCEDURES

dust or fumes. Do no	
	· · · · · · · · · · · · · · · · · · ·
ERIALS (Metals, Plastic, Rubber	
	VENTILATION REQUIREMENTS
es ·	As required to keep airborne concentrations of copper dust below TLV.
1	dust or fumes. Do no

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROX.	OSHA PEL	LD \$0	LC 5 0	SIGNIFICANT EFFECTS
Copper		Dust 1 mg Fume 0.1	/m ³ mg/m ³		Gastro-intestinal
Tin		Dust 2 mg	/m ³		Mucous membrane irritation
		DOSC D III	,	1	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT NOT METHOD Applicable	OBHA CLASSIFICATION	FLAMMASLE EXPLOSIVE LIMITS	LOWER	UPPER	
Extinguishing media Not Applicable					
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES					
Not Applicable					

<u>·</u>	SECTION V - NEAETH HAZARD DATA	
THRESHOLD LI	MIT VALUE None established.	
SYMPTOMS OF	OVER EXPOSURE Dust and fume - sneezing, congestion, metallic taste, gastro-intestinal distress, chills, fever	
	EMERGENCY FIRST-AID PROCEDURES	
\$KIN	Flush thoroughly with water.	0074
EYES	Flush with water for 15 minutes, call a physician.	
INGESTION	Drink water, induce vomiting by sticking finger down throat, call a physician.	
INHALATION	Remove victim to fresh air, call a physician.	

EMERGENCY PHONE 1-800-OLIN-911

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS							
Phosphor Bronze, 8%	Phosphor Bronze, 8%						
CHEMICAL FAMILY	FORMULA	TRADE NAME					
Copper	Mixturé	Alloy 521					
DESCRIPTION		CAS NO.					
Metal	<i>i</i> :	Not assigned/mixture					

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

INHALATION

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below TLV for copper and tin.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust 1 mg/m ³ Fume	TD _{LO} = 120 ug/kg (human)	No data	Inhalation - metal fume fever respiratory tract irritation
Tin	0.1 mg/m ³ Dust 2 mg/m ³	No data	No data	Mucous membrane irritation, accumulation of dust in lung

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POIN	IT	OSHA CLASSIFICATION	FLAMMABLE	LOWER	UPPER
METHOD	Not applicable	Non-combustible solid	LIMITS	N/A	N/A
EXTINGUISH	IING MEDIA				
1	Use extinguishing m	edia suitable for surrounding materials.			
SPECIAL FIF	RE HAZARD & FIRE FIGHTI	NG PROCEDURES USE NIOSH/MSHA	approved po	sitive pres	Sure
	self-contained breat	hing apparatus when any material is inv	olved in a fir	e.	

SECTION V - HEALTH HAZARD DATA

		•
THRESHOLD LIM	IIT VALUE one established for mixture (copper fume 0.2 mg/m 3 , tin 2 mg/m 3 ACGIH 1985	5-86).
SYMPTOMS OF C	Dust and fume - sneezing, congestion, metallic taste, nausea, chills, fever	
	t or fume: Wash with EMERGENCY FIRST-AID PROCEDURES pand water before eating or smoking. If an irritation develops, call a physicia	n.
EYES	Dust or fume: Flush thoroughly with water for 15 minutes. Call a physici-	an II
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	0908-2108
INUAL ATION	Dust or Fume: Remove victim to fresh air. Call a physician.	TRW-00742



EMERGENCY PHONE (203) 356-2345

Olin Corporation, 120 Long Ridge Road

PLAMMABILITY REACTIVITY **BRITAR DRAZAH** PECIAL

MATERIAL **SAFETY DATA**

Co.po.unon, 120 20ng mogo mogo	
tamford, Conn. 06904	SECTION I - IDENTIFICATION
	الرجادية المستحد المستحدين والمستحد المستحد المستحد المستحد والمستحدث والمستحدد والمستحدد والمستحدد والمستحدد

CHEMICAL NAME & SYNONYME			
Leaded Bearing Br			
CHEMICAL FAMILY	FORMULA	TRADE NAME	
Copper		Alloy 544	_
DESCRIPTION		CAS NO.	
Metal	<i>i</i> :		

SECTION II - NORMAL HANDLING PROCEDURES				
PRECAUTIONS TO SE TAKEN IN HANDLING AND STORAL Avoid breathing dust or fumes. Do no				
CORROSIVE ACTION ON MATERIALS (Metals, Plantic, Rubb	er, Eq.)			
PROTECTIVE EQUIPMENT	VENTILATION REQUIREMENTS			
Dust - goggles Gloves Other	Local exhaust or general ventilation required as dictated by airborne concentrations.			

SECTION III — HAZARDOUS INGREDIENTS

BASIC MATERIAL	approx.	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper		Dust 1 mg/ Fume 0.1 r	m ³ 1g/m ³		Gastro-intestinal
Zinc		Fume	LD _{LO} 500 mg/m ³ hum	an	Metal fume fever
Lead	3.5-4.5	0.05 mg/m	TDLO 450		Central nervous system, fetal damage

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT NOT	OSHA CLASSIFICATION		FLAMMABLE	LOWER	UPPER
METHOD Applicable			EXPLOSIVE		
EXTINGUISHING MEDIA					
Not Applicable				<u> </u>	
SPECIAL FIRE HAZARD & FIRE FIGHT	ING PROCEDURES	Use NIOSH/MSHA	approved self	-containe	ed .
breathing apparatus w	here this materia	l is involved in a fire.	•		

THRESHOLD LI	AIT VALUE		
	None established.		
SYMPTOMS OF	OVER EXPOSURE		
	Dust and fume - sneezing, congestion, metallic taste, chills,	nausea, fever.	
	EMERGENCY FIRST-AID PROCEDURES		
SKIN	Flush thoroughly with water.		
EYES	Flush with water for 15 minutes, call a physician.	TRW-00743	
INGESTION	Drink water, induce vomiting by sticking finger down throat, call a physician		
INHALATION	Remove victim to fresh air, call a physician.	2100	
		- 0908-2109	

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS				
Coronze , Alum	inum Bronze			
CHEMICAL FAMILY	FORMULA		TRADE NAME	
Copper		Mixture	Alloy 638	•
DESCRIPTION			CAS NO.	
Red orange met	allic solid 📝 🕠		Not assigned/mixture	į

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash hands with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS
Eyes Gloves Other	Dust - goggles Impervious (if necessary) NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occurs	As required to keep airborne concentrations of copper and aluminum below TLV.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL		OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust Fame	1 mg/m ³ 0.1 mg/m ³	TD _{LO} 120 ug/kg (human)	No data	Inhalation - metal fume fever, respiratory tract irritation
Aluminum		None Established	No data	No data	Over-exposure may cause lung fibrosis (Shaver's Disease)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POIN	T	OSHA CLASSIFICATION		PLAMMABLE	LOWER	UPPER
METHOD	Not Applicable	Non-comb	ustible solid	EXPLOSIVE LIMITS	N/A	N/A
EXTINGUISH	ING MEDIA					
τ	Jse extinguishing m	edia suitable for sur	ounding materia	d.		
SPECIAL FIR	E HAZARD & FIRE FIGHTI	NG PROCEDURES	Use NIOSH/MS	HA approved pos	itive press	sure
s	elf-contained breat	hing apparatus when				

THRESHOLD LIM	Copper dust 1 mg/m ³ , fume 0.2 mg/m ³ , Aluminum 10 mg/m ³ (ACGIH 1	.985-86)
SYMPTOMS OF C	DUST and fume - sneezing, congestion, metallic taste, nausea, chills, fev	er
	fume: Wash with EMERGENCY FIRST-AID PROCEDURES o and water before eating or smoking. If an irritation develops, call a physic	eian.
EYES	Dust or fume: Flush with water for 15 minutes, call a physician.	
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	
INHALATION	Dust or fume: Remove victim to fresh air, call a physician.	TRW-0074

EMERGENCY PHONE 1-800-OLIN-911

CHEMICAL NAME & SYNONYMS		
Ultronze **		
CHEMICAL FAMILY	FORMULA	TRADE NAME
Copper	Mixture	Alloy 654
DESCRIPTION		CAS NO.
Metal	1	Not assigned/mixture

SECTION 1 - IDENTIFICATION

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE	EQUIPMENT	VENTILATION REQUIREMENTS
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below the TLV for copper, chromium and tin.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL		OSHA Pel	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust Fume	l mg/m ³ 0.1 mg/m ³	TD _{LO} =120 ug/kg (human)	No data	Metal fume fever, respiratory irritation
Chromium (.0112%)	1	1 mg/m ³	No data	No data	Dermatitis, suspect
Tin	Dust	2 mg/m ³	No data	No data	carcinogen Mucous membrane irritant, accumulation dust in lung (pneumoco

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POIN	VT	OSHA CLASSIFICATION	FLAMMABLE	LOWER	UPPER			
METHOD	Not Applicable	Non-combustible solid	EXPLOSIVE	N/A	N/A			
EXTINGUISHING MEDIA Use extinguishing media suitable for surrounding materials.								
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES Use NIOSH/MSHA approved positive pressure self-contained breathing apparatus where any material is involved in a fire.								

	SECTION V - HEALTH HAZARD DATA	•
THRESHOLD LIM	tin 2 mg/m ³ , chromium 0.5 mg/m ³ , ACGIH 1985-86)	/m ³ ,
SYMPTOMS OF O	Dust and fume - sneezing, congestion, metallic tast nausea, chills, fever.	
Dust	or Fume: Wash with EMERGENCY FIRST-AID PROCEDURES	
SKIN	soap and water before eating or drinking. If an irritation develops, call	a physician.
EYE8	Dust or Fume: Flush with water for 15 minutes, call a physician.	1 1
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	0908-2111
INHALATION	Dust or Fume: Remove victim to fresh air, call a physician.	TRW-00745

SECTION 1 - IDENTIFICATION '

EMERGENCY PHONE 1-800-OLIN-911

Chemical name & Synonyms								
CoBron Iron Modified Brass								
CHEMICAL FAMILY	FORMULA	TRADE NAME						
Copper	Mixture	Alloy 664						
DESCRIPTION	<i>f</i> .	CAS NO.						
Metallic	,	Not assigned/mixture						

SECTION 11 - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

INHALATION

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIV	EEQUIPMENT	VENTILATION REQUIREMENTS
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	Local exhaust or general ventilation required as dictated by airborne concentrations.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL			OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	•	Dust Fum	1 mg/m ³ 0.1 mg/m ³	TD _{LO} 120 ug/kg	No data	Metal fume fever, respirator irritation
Zine		Fum	5 mg/m ³	(human) No data	TC _{LO3} 124 mg/m ³ /50 (min) hum	Metal fume fever
Iron		Fum	10 mg/m ³	No data	(min) hum No data	an Accumulation of dust in lung (siderosis)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	Not	OSHA CLASSIFICATION	FLAMMABLE	LOWER	UPPER
METHOD	Applicable	Non-combustible	EXPLOSIVE	N/A	N/A
EXTINGUISHIN	IG MEDIA				
LN	on-combustible -	choose extinguishing media suitable for	r surrounding	naterials.	
SPECIAL FIRE	HAZARD & FIRE FIGHTI	NG PROCEDURES USE NIOSH/MSH			ed
bı	reathing apparatu	s where this material is involved in a fi		 	,

SECTION V. HEALTH HAZARD DATA

	SECTION V - REACTH HAZARD DATA	
THRESHOLD	None established for mixutre. (Copper 1 mg/m ³ ,	
	Zinc 5 mg/m 3 , Iron 5 mg/m 3 ACGIH 1985-86).	
SYMPTOMS (Dust and fume - sneezing, congestion, metallic taste,	
	nausea, chills, fever.	
	Dust or fume: Wash with EMERGENCY FIRST-AID PROCEDURES	
SKIN	soap and water before eating or smoking. If an irritation develops, call a physic	ian.
EYES	Dust or fume: Flush thoroughly with water for 15 minutes, call a physic	,
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	0908
		TRW-0

Dust or fume: Remove victim to fresh air. Call a physician.

2112

00746

SECTION 1 - IDENTIFICATION

CHEMICAL NAME & SYNONYMS Alcoloy®			
CHEMICAL FAMILY	FORMULA		TRADE NAME
- Copper		Mixture	Alloy 688
DESCRIPTION			CAS NO.
Metallic	<i>t</i> :		Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Upon contact with skin or eyes, wash off with water. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS		
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below the TLV for copper, and aluminum.		

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA Pel	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust 1 mg/m ³ Fume 0.1 mg/m	3 LD _{LO} =120 ug/kg (human)	No data	Metal fume fever, respiratory irritation
Zine Aluminum	Fume 5 mg/m ³ None establish	No data No data ed	No data No data	Metal fume fever Lung fibrosis (Shaver's disease

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT OS		OSHA CLASSIFICATION	FLAMMABLE	LOWER	UPPER			
METHOD	Not Applicable	Non-combustible solid	LIMITS					
EXTINGUIS	EXTINGUISHING MEDIA							
	Use extinguishing media suitable for surrounding materials.							
1	SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES Use NIOSH/MSHA approved positive pressure							
	self-contained breathing apparatus where any material is involved in a fire.							

THRESHOLD LIN	None established for mixture. (Copper fume - 0.2 m fume - 5 mg/m ³ , Aluminum - 10 mg/m ³ ACGIH 1985 - 86)	g/m ³ , zinc
SYMPTOMS OF	Dust and fume - sneezing, congestion, metallic taste, nausea, chills, fever.	1 1
	Dust or Fume: EMERGENCY FIRST-AID PROCEDURES	
SKIN	Flush thoroughly with water. If an irritation develops, call a physician	
EYES	Dust or Fume: Plush with water for 15 minutes, call a physician.	0908-2113
INGESTION	Dust: If ingested, call a physician.	
INHALATION	Dust or Fume: Remove victim to fresh air, call a physician.	TRW-00747

EMERGENCY PHONE 1-800-OLIN-911

CHEMICAL NAME & SYNONYMS		
Cupro Nickel 10	%	
CHEMICAL FAMILY	FORMULA	TRADE NAME
Copper	Mixture	Alloy 706
DESCRIPTION		CAS NO.
Metal		Not assigned/mixture

SECTION 1 - IDENTIFICATION

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS		
Eyes Gloves Other	Dust - goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below TLV for copper and nickel.		

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL		OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust Fume	1 mg/m ³ 0.1 mg/m ³	TD _{LO} 120 ug/kg (human)	No data	Metal fume fever, respiratory irritation
Nickel	Dust	1 mg/m ³	LD _{LO} 5 mg/kg (guinea pig)	No data	Dermatitis, suspect carcinogen

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT		OSHA CLASSIFICATION		FLAMMABLE	LOWER	UPPER		
METHOD	Not Applicable	Non-comb	eombustible solid EXPLOSIVE N/A			N/A		
EXTINGUISHIN	G MEDIA							
No	n-combustible - C	hoose extinguishing	media suitable fo	or surrounding m	aterials.			
SPECIAL FIRE	SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES Use NIOSH/MSHA approved self-contained							
bre	athing apparatus	where this material	is involved in a f	ire.				

THRESHOLD LIM	
	dust 1.0 mg/m ³ ACGIH 1985-86).
SYMPTOMS OF	Dust and fume - sneezing, congestion, metallic taste, nausea,
	chills, dermatitis
Dust	t or fume: Wash with EMERGENCY FIRST-AID PROCEDURES
skin soap	and water before eating or smoking. If an irritation develops, call a physician.
EYES	Dust or fume: Flush with water for 15 minutes. Call a physician.
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.
INHALATION	Dust or Fume: Remove victim to fresh air. Call a physician.

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50	No data for alloy	CARCINOGENICITY	Nickel is considered a carcinogen (NTP)
ACUTE DERMAL LD 50	No data for alloy	MUTAGENICITY EYE IRRITATION	Not known to be mutagenic Dust is an irritant
		PRIMARY SKIN IRRITA	ATION Dust may be an irritant
ACUTE INHALATION LC 50	No data for alloy		
	exposure to metal dus		
effects of acute exposu and mucous memb		Metal fume feve	er, respiratory irritation, skin, eye
effects of chronic exposers. Nickel ha	sure Dermatitis. Cas been associated with		sure may cause kidney and liver

SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

ACTION FOR MATERIAL RELEASE OR SPILL

Dust or fume - Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill, use the emergency telephone number shown on the front of this sheet.

TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

Not regulated

WASTE DISPOSAL METHOD

D.O.T. CLASS

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - SHIPPING DATA

			SECITO	UN IX - KEA	CTIVITY DATA	····
STABLE	X UNSTABLE	AT	°c	o _F	HAZARDOUS	MAY OCCUR
					POLYMERIZATION	WILL NOT OCCUR X
CONDITION	IS TO AVOID	Carbon	monoxide	during mel	ting	
INCOMPAT	IBILITY (Material to	Avoid) I	oust and f	ume - acet	ylene, chlorine	

SECTION X - PHYSICAL DATA

MELTING POINT	2010°F	VAPOR PRESSURE	N/A	VOLATILES	N/A
BOILING POINT	No data	SOLUBILITY IN WATER	Insoluble	EVAPORATION RATE	N/A
SPECIFIC GRAVITY	(H ₂ O = 1) *	pH N/A		VAPOR DENSITY (Air = 1)	N/A
*DENSITY	.323 pounds/in ³				•

INFORMATION FURNISHED BY:

Environmental Hygiene and Toxicology

(203) 789-5436

DATE

March 31, 1986

TRW-00749

Department of Environmental Hygiene and Toxicology (203) 789-5436

Olin CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904

OCEAN® Network

EMERGENCY PHONE 1-800-OLIN-911



MATERIAL SAFETY DATA

OCEANSM Network

EMERGENCY PHONE (203) 356-2345

Olin	Cor	Þ	oration,	12	20	ı	_ong	1	Ridge	Road	
_								_			

SECTION I - IDENTIFICATION

Stanford Connecticut 06904	360110111 - 10 5111	
CHEMICAL NAME & SYNONYM	8	
Copper Nickel 15°	%	
CHEMICAL FAMILY Copper	FORMULA	TRADE NAME ALLOY 709
OESCRIPTION Metal	ı i	CAS NO.

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive operations and melting only. Do not get in eyes, on skin or on clothing. Do not take internally. Avoid breathing dust or fumes.

30111001	VE ACTION ON MATERIALS (Motels, Pleasts, Ru	
PROTECT	IVE EQUIPMENT	VENTILATION REQUIREMENTS
Eyes Gleves	Dust and Fume - Goggles None necessary	Dust or fume - Local exhaust or general ventilation required as dictated
Other	None necessary	, by airborne concentrations.

SECTION III — HAZARDOUS INGREDIENTS

APPROX	. OSHA PEL	LD 80	LC 90	SIGNIFICANT EFFECTS
	Dust 1 mg Fume 0.1	m ³ ng/m ³		Dust and fume - chills, gastro-intestinal distress
		^		Dust or metal - dermatitis
		Dust 1 mg Fume 0.1	Dust 1 mg/m ³ Fume 0.1 mg/m ³ Dust 1 mg/m ³	Dust I mg/m ³ Fume 0.1 mg/m ³

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT METHOD	Not Applicable	OSHA CLASSIFICATION Not Applicable	FLAMMASLE · LOWI EXPLOSIVE LIMITS	ER UPPER					
1	Extinguishing media Not Applicable								
	Precial Fire HAZARD & FIRE FIGHTING PROCEDURES Use NIOSH/MSHA approved self-contained breathing apparatus where this material is involved in a fire.								

THRESHOLD LI	None established.		
SYMPTOMS OF	over exposure Dust or Fume: Sneezing, congestion, metallic tast nausea, chills, dermatitis	ie,	
SKIN	Dust or fume: EMERGENCY FIRST-AID PROCEDURES Flush thoroughly with water.		
tyts	Dust or fume: Flush with water for 15 minutes, call a physician.	TRW-0075	
INGESTION	Dust or fume: Drink water, induce vomiting by sticking finger down throat, call a pl	nysician.	
INHALATION	Dust or fume: Remove victim to fresh air, call a physician.	0908-2116	

EMERGENCY PHONE 1-800-OLIN-911

CHEMICAL NAME & SYNONYMS		
Copper Nickel 2	0%	
CHEMICAL FAMILY	FORMULA	TRADE NAME
Copper	Mixture	ALLOY 710
DESCRIPTION		CAS NO.
Metal		Not assigned/mixture

SECTION I - IDENTIFICATION

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIV	E EQUIPMENT	VENTILATION REQUIREMENTS
Eyes Gloves	Goggles Impervious NIOSH/MSHA approved high	As required to keep airborne concentrations below the TLV for copper, zinc and nickel.
Other	efficiency particulate respirator if excessive dusting/fumes occur	Zine and meker.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL		OSHA Pel	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust Fume	1 mg/m ³ 0.1 mg/m ³	${ m TD_{LO}}$ 120 ug/kg	No data	Metal fume fever, respiratory irritation
Zinc	Fume	5 mg/m ³	(human) No data	TCLO 124 mg/m	Metal fume fever
Nickel	Dust	1 mg/m ³	No data	50 min.(hu No data	m.) Dermatitis, suspect

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	OSHA CLASSIFICATION	FLAMMABLE	LOWER	UPPER					
METHOD Not Applicable	Non-combustible se	EXPLOSIVE LIMITS	N/A	N/A					
EXTINGUISHING MEDIA Use extinguishing media suitable for surrounding materials.									
	SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES Use NIOSH/MSHA approved positive pressure self-contained breathing apparatus when any material is involved in a fire.								

THRESHOLD LIM	None established for mixture (copper fume 0.2) 5 mg/m^3 , nickel 1 mg/m ³ ACGIH 1985-86).	mg/m ³ , zinc fume
SYMPTOMS OF C		
Dust an	d fume - sneezing, congestion, metallic taste, nausea, chills, fever, d	ermatitis.
Dust	or fume: Wash with EMERGENCY FIRST-AID PROCEDURES	
SKIN SOAP	and water before eating or smoking. If an irritation develops, call a	physician.
EYES	Dust or fume: Flush thoroughly with water for 15 minutes. Call a	physician.
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician	•
INHALATION	Dust or Fume: Remove victim to fresh air. Call a physician.	TRW-00751

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50	No data for alloy	CARCINOGENICITY MUTAGENICITY	Nickel is considered carcinogenic Not known to be mutagenic (NTP)
ACUTE DERMAL LD 50	No data for alloy	EYE IRRITATION	Dust is irritating
		PRIMARY SKIN IRRITA	ATION Dust may be an irritant
ACUTE INHALATION LC 50	No data for alloy		•
Inhalation of dust	or fume		
EFFECTS OF ACUTE EXPOSU		ver (chills, fever,	nausea), respiratory irritation, skin
eye, mucous mem	brane irritation.		
overexposure may	sume None expected y cause kidney and li	d under normal in ver effects. Nic	ndustrial use conditions. Chronic kel has been associated with lung

SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

ACTION FOR MATERIAL RELEASE OR SPILL

Dust or Fume: Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill, use the emergency telephone number shown on the front of this sheet.

TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

WASTE DISPOSAL METHOD

Dispose of contaminated product, empty containers and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - SHIPPING DATA

	Ass Not regulated							
SECTION IX - REACTIVITY DATA								
STABLE X UN	STABLE AT	°c	o _F	HAZARDOUS	MAY OCCUR			
	-			POLYMERIZATION	WILL NOT OCCUR X			
CONDITIONS TO AVO	Frese	nce or caro	on monoxid	le during melting				

SECTION X - PHYSICAL DATA

MELTING POINT 2100°F	VAPOR PRESSURE N/A	VOLATILES N/A
BOILING POINT No data	SOLUBILITY IN WATER Insoluble	EVAPORATION RATE N/A
SPECIFIC GRAVITY (H,O * 1) *	pH N/A	VAPOR DENSITY (Air = 1) N/A
*DENSITY .323 lbs./in ³		

INFORMATION FURNISHED BY:

ne

DATE

TRW-00752

Environmental Hygiene and Toxicology (203) 789-5436

Department of Environmental Hygiene and Toxicology (203) 789-5436

Olin CORPORATION

March 20, 1986

120 Long Ridge Road, Stamford, Connecticut 06904

OCEAN® Network

EMERGENCY PHONE 1-800-OLIN-911



EMERGENCY PHONE (203) 356-234

Olin Corporation, 120 Long Ridge Road

Stamford, Connecticut 06904

MATERIAL SAFETY DATA

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS Copper Nickel 25%			
CHEMICAL FAMILY Copper	FORMULA	TRADE NAME ALLOY 713	
DESCRIPTION Metal	, :	CAS NO.	

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO SE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive operations and melting only. Do not get in eyes, on skin or on clothing. Do not take internally. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT VENTILATION REQUIREMENTS				
Eyes Gloves	Dust and Fume - Goggles None necessary	Dust or fume - Local exhaust or general ventilation required as dictated		
Other	None necessary	, by airborne concentrations.		

SECTION III — HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROX.	oeha Pel	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper		Dust 1 mg Fume 0.1	/m ³ mg/m ³		Dust and fume - chills, gastro-intestinal distress
Nickel		Dust 1 mg			Dust or metal - dermatitis

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	Not	OSHA CLASSIFICATION	FLAMMABLE	LOWER	UPPER			
METHOD	Apolicable	Not Applicable	EXPLOSIVE					
EXTINGUISHIN	IG MEDIA							
	Applicable			<u> </u>				
SPECIAL FIRE	SPECIAL FIRE HAZARO & FIRE FIGHTING PROCEDURES USE NIOSH/MSHA approved self-contained							
breat	hing apparatus	where this material is involved in	a fire.		لــــــا			

<u> </u>	SECTION V - HEALTH HAZARD DATA	
THRESHOLD LI	MIT VALUE	
	None established.	
SYMPTOMS OF	OVER EXPOSURE Dust or Fume: Sneezing, congestion, metallic taste, nausea, chills, dermatitis	
\$KIN	Dust or fume: EMERGENCY FIRST-AID PROCEDURES Flush thoroughly with water.	
EYE1	Dust or fume: Flush with water for 15 minutes, call a physician.	TRW-00753
INGESTION	Dust or fume: Drink water, induce vomiting by sticking finger down throat, call a phys	sician.
INHALATION	Dust or fume: Remove victim to fresh air, call a physician.	

OCEAN Network
EMERGENCY PHONE 1-800-OLIN-911

SECTION I - IDENTIFICATION -

CHEMICAL NAME & SYNONYMS Cupro Nickel 30%			
CHEMICAL FAMILY Copper	FORMULA	Mixture	TRADE NAME Alloy 715
DESCRIPTION Metal	, ,		CAS NO. Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below the TLV for copper and nickel.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL			OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	•	Dust Fume	0.1 mg/m ³	TD _{LO} = 120 ug/kg (human)	No data	Dust and fume-metal fume fever, respiratory irritation
Nickel		Dust	1 mg/m ³	LD _{LO} = 5 mg/kg (guinea pig)	No data	Dust or metal-dermatitis, suspect carcinogen

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT		OSHA CLASSIFICATION		LOWER	UPPER		
METHOD	Not Applicable	Non-combustible solid	EXPLOSIVE	N/A	N/A		
EXTINGUISHING MEDIA							
Use	e extinguishing mo	edia suitable for surrounding material	s.				
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES Use NIOSH/MSHA approved positive pressure							
self	f-contained breat	hing apparatus where any material is	involved in a fi	re.			

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	None established for mixture (Copper fume - 0.2 mg/m ³ , Nickel -
1 mg/r	n ³ ACGIH 1984).
SYMPTOMS OF OVER EXPOSE	Dust or Fume: Sneezing, congestion, metallic taste,
nausea	, chills, dermatitis
Dust or fumer soap and water	Wash with EMERGENCY FIRST-AID PROCEDURES er before eating or smoking. If an irritation develops, call a physician.
EVES Dust o	r fume: Flush with water for 15 minutes, call a physician.
	0908-212

TRW-00754

INHALATION

INGESTION

Dust or Fume: Remove victim to fresh air, call a physician.

Dust: Not a likely route of exposure. If ingested, call a physician.



EMERGENCY PHONE (203) 356-2345

HEALTH 2 0 REACTIVITY
HAZARO RATING

MATERIAL SAFETY DATA

Olin Corporation, 120 Long Ridge Road

Chamband	Connecticut	
Stamtord.	CONNECTION	ORUNA
,		0000

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYME			
Copper Alloy			
CHEMICAL FAMILY	FORMULA .	TRADE NAME	
Copper		ALLOY 724	
DESCRIPTION		CAS NO.	
Metal		·	

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive operations and melting only. Do not get in eyes, on skin or on clothing. Do not take internally. Avoid breathing dust or fumes.

	VE ACTION ON MATERIALS (Metals, Plantic, Ru			
PROTECTIVE EQUIPMENT VENTILATION REQUIREMENTS				
Eyes Gloves	Dust and Fume - Goggles None necessary	Dust or fume - Local exhaust or general ventilation required as dictated		
Other	None necessary	by airborne concentrations.		

SECTION III – HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROX.	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper		Dust 1 mg/ Fume (L1 r	m3 ng/m3		Dust and fume - chills,
Nickel		Dust 1 mg			Dust or metal - dermatitis

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT			N	PLAMMABLE	LOWER	UPPER	
METHOD	Applicable	Not Applic	ehle	LIMITS			
EXTINDUISHIND MEDIA							
- Not Applicable							
CONCIAL FLOR DETAINS A SIDE SIGURING DECESSIONS							
Use NIOSH/NISHA approved self-contained							
hreatl	hing annaratus w	here this material	is involved in a fire				

THRESHOLD L	MIT VALUE	
•	None established.	
SYMPTOMS OF	Dust or Fume: Sneezing, congestion, metallinguses, chills, dermatitis	c taste,
SKIM	Dust or fume: EMERGENCY FIRST-AID PROCEDURES Flush thoroughly with water	
2728	Dust or fume: Flush with water for 15 minutes, call a physician.	
INGESTION	Dust or fume: Drink water, induce vomiting by sticking finger down throat, ca	II a physician.
INHALATION	Dust or fume: Remove victim to fresh air, call a physician.	TRW-0074

CHEMICAL NAME ALLOY B-27

SECTION VI - TOXICOLOGY (Product)

Lowest Published Lethal ACUTE ORAL

CARCINOGENIC Dust may cause respiratory tract cancer

Dose - (Copper) 120 mg/kg (human)

Not known to be mutagenic

ACUTE DERMAL LD 80

No available data

EYE IMPITATION Dust and fume - irritants
Dust is irritant PRIMARY SKIN IRRITATION

ACUTE INHALATION LC M

No available data

PRINCIPAL ROUTES OF ASSORPTION

Inhalation, ingestion of metal, dust or fume

EPPECTS OF ACUTE EXPOSURE

Dust or fume: Congestion, gastro-intestinal distress, chills, dermatitis

EFFECTS OF CHRONIC EXPOSURE

Dust and fume: May cause kidney, liver or spleen damage, anemia

SECTION VII - SPILL OR LEAKAGE PROCEDURES (Control Procedures)

Stepe to be taken in case material is released or spilled

Dust or fume - Wear NIOSH/MSHA approved dust and fume respirator. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134). Shovel or sweep up and place in an approved DOT container and seal. Wash all contaminated clothing before reuse.

In the event of a large spill use the emergency telephone number shown on the front of this sheet.

DONTOM JAROPENO STRAN

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII — REACTIVITY DATA

STAGLE HAZAROOUS MAY OCCUR XUMSTABLE POLYMERIZATION WILL NOT OCCUP Presence of carbon monoxide (during melting) CONDITIONS TO AVOID

Dust and fume - acetylene, chloride INCOMPATABILITY IM

Copper fume, nickel carbonyl HAZARDOUS DECOMPOSITION PRODUCTS

SECTION IX - PHYSICAL DATA

MELTING POINT	2057°F	VAPOR PROBLEM	VOLATILES
BOILING POINT		SOLUSILITY IN WATER	EVAPORATION RATE
SPECIFIC GRAVITY	1,0 -11	g00	VAPOR DENSITY(Ab = 1)
DENSITY	310 lbs/m ³		

INFORMATION FURNISHED BY:

A. L. Gaudreau (203) 789-5434

DATE

October 19, 1984

Department of Environmental Hygiene and Toxicology

in corporation

120 Long Ridge Road, Stamford, Connecticut 06904 OCEANSM Network

EMERGENCY PHONE (203) 356-2345



DATE: 3/26/85

REV. DATE: 4/21/86

REVISION NO.:____1

MATERIAL SAFETY DATA SHEET

SECTION 1

MANUFACTURER'S NAME:

HUSSEY COPPER LTD.

ADDRESS:

Washington Street LEETSDALE, PA. 15056

EMERGENCY PHONE NO.:

412-857-4200

CHEMICAL NAME AND SYNONYMS:

COPPER; LEAD

TRADE NAME AND SYNONYMS:

Lead coat, copper, lead, Pb coated copper

Lead coated copper sheets

CHEMICAL FAMILY:

COPPER AND LEAD

	SECTION 11 - HAZAI	RDOUS INGREDIENTS	
INGREDIENT	PERCENT	CAS NO.	OSHA-PEL/ACGIH-TLV
Copper base metal	99.9	7440-50-8	1
Lead Coating	15 lbs. max per 100 ft. 2 of copper surface	7439-92-1	Exposure Levels See Section V

HAZARDOUS MIXTURES OF OTHERS LIQUIDS, SOLIDS, OR GASES:

If exposure to copper dust/fume and lead dust/fume are kept below Permissible Exposure Limits (PEL)/ Threshold Limit Value (TLV) all trace elements should not pose any health risk.

SECTION	111 _	PHYSICAL	DATA
36611011		IIIIILAL	UAIA

MELTING

copper 1949 ° F, lead 621° F

Vapor Pressure (mm Hg.)

Not Applicable

Solubility in Water

negligible

Specific Gravity (H² O = 1)

copper 8.9 lead 11.0

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used)

Not applicable *

Extinguishing Media

Not Applicable

Special Fire Fighting Procedures

Not applicable

TRW-00757

Unusual Fire and Explosion Hazards

Not applicable

[❤] Under normal conditions. Heavy concentrations of fine copper dust may cause flash fire if exposed to innitian source.

EMERGENCY PHONE 1-800-OLIN-911

CHEMICAL NAME & SYNONYMS		
Copper Nickel Al		
CHEMICAL FAMILY	FORMULA	TRADE NAME
Copper	Mixture	Alloy 725
DESCRIPTION		CAS NO.
Metal		Not assigned/mixture

SECTION I - IDENTIFICATION

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIV	EEQUIPMENT	VENTILATION REQUIREMENTS			
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below the TLV for copper, nickel and tin.			

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust 1 mg/m ³ Fune 0.1 mg/m	TDLO=120	No data	Dust and fume - chills, gastro-intestinal distress
Nickel	Dust 1 mg/m ³	(human) LDLO=5 mg/kg	No data	Dust or metal-dermatitis, suspect carcinogen
Tin	Dust 2 mg/m ³	guinea pig No data	No data	Mucous membrane irritation accumulation in lung
				(pneumoconiosis)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT		OSHA CLASSIFICATION	FLAMMABLE	LOWER	UPPER
METHOD	Not Applicable	Non-combustible solid	EXPLOSIVE LIMITS	N/A	N/A
	se extinguishing m	edia suitable for surrounding materials			
1	HAZARD & FIRE FIGHTING IT CONTAINED TO THE PROPERTY OF THE PRO	IG PROCEDURES Use NIOSH/MSHA hing apparatus where any material is in			sure

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIM	
L	Nickel 1 mg/m ³ , Tin 2 mg/m ³ ACGIH 1985-86)
SYMPTOMS OF O	Dust or Fume: Sneezing, congestion, metallic taste, nausea, chills, dermatitis
Dust	or fume: Wash with EMERGENCY FIRST-AID PROCEDURES
	nd water before reating of smoking. If an irritation develops, call a physician.
EYES	Dust or fume: Flush with water for 15 minutes, call a physician.
INGESTION	Dust: Not a likely route or exposure. If ingested, call a physician.
INHALATION	Dust or Fume: Remove victim to fresh air, call a physician.

IKW-00758

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50	No data for alloy	CARCINOGENICITY	See *** below
ACUTE DERMAL LD 50	No data for alloy	MUTAGENICITY EYE IRRITATION	No data Dust and fume - irritant
ACUTE INHALATION LC 50	No data for alloy	PRIMARY SKIN IRRIT	Dust may be an irritant
	***	Nickel is consider	red a carcinogen by NTP
PRINCIPAL ROUTES OF ABSO	RPTION		
Inhalation, dermal	exposure to metal dus	t or fume	
EFFECTS OF ACUTE EXPOSU	RE Dust or fume:	Metal fume feve	er, respiratory irritation, skin, eye

and mucous membrane irritation.

EFFECTS OF CHRONIC EXPOSURE Dermatitis. Chronic over-exposure may cause kidney and liver effects. Nickel has been associated with lung cancers.

SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

ACTION FOR MATERIAL RELEASE OR SPILL

Dust or fume - Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill use the emergency telephone number shown on the front of this sheet.

TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

WASTE DISPOSAL METHOD

Dispose of contaminated product, empty containers and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - SHIPPING DATA

			SECTIO	ON IX - REA	CTIVITY DATA	
STABLE	X UNSTABLE	AT	°c	°F	HAZARDOUS	MAY OCCUR
					POLYMERIZATION	WILL NOT OCCUR X
CONDITION	IS TO AVOID	Presend	ce of cart	on monoxic	de during melting	
			_		e - acetylene, chlorid	

SECTION X - PHYSICAL DATA

Copper fume, nickel carbonyl, tin oxide

MELTING POINT 1940°F	VAPOR PRESSURE	N/A	VOLATILES	N/A
BOILING POINT No data	SOLUBILITY IN WATER	Insoluble	EVAPORATION RATE	N/A
SPECIFIC GRAVITY (H2O - 1) *	pH N/A		VAPOR DENSITY (Air * 1)	N/A
*DENSITY .323 lbs/in ³		-		

INFORMATION FURNISHED BY:

HAZARDOUS DECOMPOSITION PRODUCTS

Environmental Hygiene DATE and Toxicology Department

March 18, 1986

TRW-00759

(203) 789-5436

Department of Environmental Hygiene and Toxicology (203) 789-5436

II CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904 OCEAN® Network **EMERGENCY PHONE 1-800-OLIN-911**

1058

EMERGENCY PHONE 1-800-OLIN-911

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS Nickel Silver 72-18			
CHEMICAL FAMILY Copper	FORMULA	Mixture	TRADE NAME Alloy 735
DESCRIPTION Metal	7 1		CAS No. Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVI	EQUIPMENT	VENTILATION REQUIREMENTS
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occurs.	As required to keep airborne concentrations below TLV for copper, zince and nickel.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL		OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust Fume	1 mg/m ³ 0.1 mg/m ³	TD _{LO} 120 ug/kg	No data	Metal fume fever, respiratory irritation
Zine	Fume	5 mg/m ³	(human) No data	TCLO 124 mg/m	Metal fume fever
Nickel	Dust	1 mg/m ³	LD _{LO} =5m	50 min.(h g/kg	Dermatitis, suspect

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POI	NT	OSHA CLASSIFICATION			FLAMMABLE	LOWER	UPPER
METHOD	Not Applicable	Non-combi	stible solid		EXPLOSIVE LIMITS	N/A	N/A
EXTINGUIS	-	nedia suitable for sur	ounding ma	terials.			
SPECIAL FI	RE HAZARD & FIRE FIGHTI	NG PROCEDURES	Use NIOSI	H/MSHA	approved	positive	pressure
	self-contained brea	thing apparatus when	any materia	al is invo	lved in a fi	re.	

THRESHOLD	None established for mixture (copper fume 0.2 mg/r 5 mg/m ³ , Nickel 1 mg/m ³ (ACGIH 1985-86.).	n ³ , zinc fume
SYMPTOMS C	F OVER EXPOSURE	
Dus	t and fume - sneezing, congestion, metallic taste, nausea, chills, fever, dema	titis.
	Dust or fume: Wash with EMERGENCY FIRST-AID PROCEDURES soap and water before eating or smoking. If an irritation develops, call a phy	sician.
EYES	Dust or fume: Flush thoroughly with water for 15 minutes. Call a phy	rsician.
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	
INHALATION	Dust or Fume: Remove victim to fresh air. Call a physician.	TRW-007



FLAMMABILITY

MATERIAL SAFETY DATA

Olin	Corporation,	120	Long	Ridge	Road

Stamford, Connecticut 06904

CYES

INGESTION

INHALATION

SECTION I - IDENTIFICATION '

HEMICAL FAMILY	FOF	MULA		TRADE	NAME		
Copper				1	oy 740		
ESCRIPTION Metal	,	ı i		CAS NO).		
			HANDLING I		ES		
RECAUTIONS TO SE TAKEN IN H Avoid breathing dus	t or lume	Do not ta	ke internally	y .	•		
	•	*			-		
•							
	<u> </u>	·				······································	
ORROSIVE ACTION ON MATERIA ROTECTIVE EQUIPMENT	LS (Metale, PI	estic, Rubber, Et		N REQUIREME	MT9		
Even Dust - goggles		exhaust or		ntiletion			
Heres Dust - goggies				ed as dictat			•
Other ·				ntrations.			
	SECTION	i III – HAZA	RDOUS ING	REDIENTS			
BASIC MATERIAL	APPROX.	OSHA PEL	LD 50	LC 60	SIGNII	FICANT EFF	ECTS
Copper		Dust 1 mg Fume 0.1	ms/m ³ 1 mg/	m3	Gastro-ii	ntestinal	
					Dermatitis,		
Nickel		Dust 1 mg				•	
Nickel		Dust 1 mg	/m ³	TCLO	lung can	cer	
			/m ³		lung can	cer	
Nickel Zinc		Fume 5 mg/m ³	/m ³ LDLO 500 mg/kg	(numan)	lung cand	me fever	
Nickel Zinc SEC		Fume 5 mg/m ³	/m ³ LDLO 500 mg/kg (numan)	1CLO 600 mg/m ² (numan) HAZARD	lung cand	cer	UPPER
Nickel Zinc SEC FLASH POINT NOT METHOD Applicable EXTINGUISHING MEDIA		Fume 5 mg/m ³	/m ³ LDLO 500 mg/kg (numan)	1CLO 600 mg/m ² (numan) HAZARD	Metal fu	me fever	UPPER
Nickel Zinc SEC FLASH POINT NOT Applicable EXTINGUISHING MEDIA NOT Applicable SPECIAL FIRE HAZARD & FIRE F	OSHA CL	FUME 5 mg/m ³ - FIRE AND ASSIFICATION	/m ³ LDLO 500 mg/kg (numan)	1CLO 600 mg/m ² (numan) HAZARD	Metal fu	me fever	UPPER
Nickel Zinc SEC PLASH POINT NUT METHOD Applicable EXTINGUISHING MEDIA Not Applicable	OSHA CL	FUME 5 mg/m ³ - FIRE AND ASSIFICATION	/m ³ LDLO 500 mg/kg (numan)	1CLO 600 mg/m ² (numan) HAZARD	Metal fu	me fever	UPPER
Nickel Zinc SEC FLASH POINT NOT Applicable EXTINGUISHING MEDIA NOT Applicable SPECIAL FIRE HAZARD & FIRE F	OSHA CL	FUME 5 mg/m ³ - FIRE AND ASSIFICATION DOCEOURES	/m ³ LDLO 500 mg/kg (numan)	1CLO 600 mg/m ² (numan) HAZARD	Metal fu	me fever	UPPER
Nickel Zinc SEC FLASH POINT NOT Applicable EXTINGUISHING MEDIA NOT Applicable SPECIAL FIRE HAZARO & FIRE F NOT Applicable	OSHA CL	FUME 5 mg/m ³ - FIRE AND ASSIFICATION DOCEOURES	/m ³ LDLO 500 mg/kg (numan) EXPLOSION	1CLO 600 mg/m ² (numan) HAZARD	Metal fu	me fever	UPPER
Nickel Zinc SEC FLASH POINT NOT Applicable EXTINGUISHING MEDIA NOT Applicable SPECIAL FIRE HAZARD & FIRE F	SECTIONS PROSPERED IN SECTIONS SECTIONS SECTIONS SECTIONS SHEET.	Fume 5 mg/m ³ - FIRE AND ASSIFICATION DOCEOURES ON V — HEAD DUST and TUT	/m ³ LDLO 500 mg/kg (human) EXPLOSION LTH HAZAR	TCLO 600 mg/m ² (human) HAZARD	Metal fu DATA LAMMABLE XPLOSIVE IMITS	me fever	UPPER

Drink water, induce vomiting by sticking finger down throat, call a physician.

Flush with water for 15 minutes, call a physician.

Remove victim to fresh air, call a physician.

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS		
Nickel Silver 189	6	
CHEMICAL FAMILY	FORMULA	TRADE NAME
Copper	Mixture	Alloy 752
DESCRIPTION		CAS NO.
Metal	<i>f</i> = f	Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

INHALATION

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIV	EEQUIPMENT	VENTILATION REQUIREMENTS
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below the TLV for copper, nickel and zinc.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL			OSHA PEL	LD 50 _.	LC 50	SIGNIFICANT EFFECTS
·Copper	,	Dust Fume	1 mg/m ³ 0.1 mg/m ³	TD _{LO} =120 ug/kg	No data	Dust and fume - chills, gastro-intestinal distress
Nickel		Dust	1 mg/m ³	(human) LD _{LO} =5 mg/kg	No data	Dust or metal-dermatitis suspect carcinogen
Zine		Fume	5 mg/m ³	(guinea pig) No data	TCLO=124 mg/m3/50	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLASH POINT OSHA CLASSIFICATION				LOWER	UPPER
METHOD						N/A
EXTINGUISHING	MEDIA					
Use	extinguishing me	dia suitable for s	urrounding materials	•		
SPECIAL FIRE H	AZARD & FIRE FIGHTI	G PROCEDURES	Use NIOSH/MSHA	A approved pos	itive pres	sure
self	-contained breatl	ning apparatus wh	ere any material is i			

SECTION V - HEALTH HAZARD DATA

	SECTION V- HEAETH HAZARD DATA	
THRESHOLD LI	None established for mixture (Copper fume 1 mg/m ³ , Zinc fume - 5 mg/m ³ ACGIH 1985-86).	- 0.2 mg/m ³ , Nickel -
SYMPTOMS OF	OVER EXPOSURE Dust or Fume: Sneezing, congestion, meta	allic taste, nausea,
	chills, dermatitis	
Dus	t or fume: Wash with EMERGENCY FIRST-AID PROCEDURES	
	p and water before eating or smoking. If an irritation develops, o	call a physician.
EYES	Dust or fume: Flush with water for 15 minutes, call a physic	ian
INGESTION	Dust: Not a likely route of exposure. If ingested, call a phys	0908-2
		TD W

Dust or Fume: Remove victim to fresh air, call a physician.



SAFETY DATA **EMERGENCY PHONE 1-800-OLIN-911**

SECTION I - IDENTIFICATION -

CHEMICAL NAME & SYNONYMS Nickel Silver, 59-12			
CHEMICAL FAMILY Copper	FORMULA	Mixture	TRADE NAME Alloy 762
DESCRIPTION Metal			Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIV	E EQUIPMENT	VENTILATION REQUIREMENTS
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occurs.	As required to keep airborne concentrations below TLV for copper, nickel and zinc.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL		OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust Fume	1 mg/m ³ 0.1 mg/m ³	$ ext{TD}_{ ext{LO}}$ 120 ug/kg	No data	Metal fume fever, respiratory irritation
Zine	Pume	5 mg/m ³	(human) No data	TCLO 124 mg/m ³	Metal fume fever
Nickel	Dust	1 mg/m ³	LD _{LO} =	50 min.(hu No data	n.) Dermatitis, suspect carcinogen

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	OSHA CLASSIFICATION		FLAMMABLE	LOWER	UPPER
METHOD Not Applicable	Non-combustible	solid	EXPLOSIVE LIMITS	N/A	N/A
EXTINGUISHING MEDIA					
Use extinguishing me	edia suitable for surrounding	g materials.			
SPECIAL FIRE HAZARD & FIRE FIGHTI	NG PROCEDURES Use 1	NIOSH/MSHA	approved	positive	pressure
self-contained breat	hing apparatus when any ma	aterial is involv	ed in a fire	ė	

	SECTION V - HEALTH HAZARD DATA	~
THRESHOLD LIN	rions established for mixture (copper fulle 0.2 mg/lll, VII	nc fume
SYMPTOMS OF	5 mg/m ³ , nickel 1 mg/m ³ ACGIH 1985-86).	
Dust an	d fume - sneezing, congestion, metallic taste, nausea, chills, fever, dematitis.	
)	t or fume: Wash with EMERGENCY FIRST-AID PROCEDURES and water before eating or smoking. If an irritation develops, call a physician	
EYES	Dust or fume: Flush thoroughly with water for 15 minutes. Call a physician	0908-2129
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	TDIII oonaa
INHALATION	Dust or Fume: Remove victim to fresh air. Call a physician.	TRW-00763



MATERIAL SAFETY DATA

OCEAN® Network
EMERGENCY PHONE 1-800-OLIN-911

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS			
Nickel Silver 189			
CHEMICAL FAMILY	PORMULA		TRADE NAME
Copper		Mixture	Alloy 770
DESCRIPTION	, , ,		CAS NO.
Metal	1 - 1		Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAXEN IN HANDLING AND STORAGE

INHALATION

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below the TLV for copper, nickel and zinc.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust 1 mg/m ³ Fune 0.1 mg/m	3 TDLO=120 Jug/kg	No data	Dust and fume - chills, gastro-intestinal distress
Nickel	Dust 1 mg/m ³	(human) LD _{LO} =5 mg/kg	No data	Dust or metal-dermatitis, suspect carcinogen
Zinc	 Fune 5 mg/m ³	guinea pig No data	No data	Metal fume fever

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POIN' METHOD	Not Applicable	OSHA CLASSIFICATION Non-combustible solid	FLAMMABLE EXPLOSIVE LIMITS	LOWER N/A	N/A
HRIUDNITKS J		edia suitable for surrounding materia	ls.		
SPECIAL FIR	E HAZARD & FIRE FIGHTI		A approved po		ssure

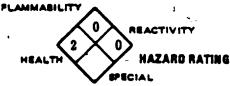
SECTION V - HEALTH HAZARD DATA

	SECTION V- HEARIN HAZARD DATA	•
THRESHOLD LI	nickel 1 mg/m ³ , zinc 5 mg/m ³ ACGIH 1985-86)	
SYMPTOMS OF	OVER EXPOSURE Dust or Fume: Sneezing, congestion, metallic taste, nausea, chills, dermatitis	
	or fume: Wash with EMERGENCY FIRST-AID PROCEDURES and water before eating or smoking. If an irritation develops, call a physician.	
EYES	Dust or fume: Flush with water for 15 minutes, call a physician.	 1 1
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	0908-2130
	Dust or Fume: Remove victim to fresh air, call a physician.	TRW-00



EMERGENCY PHONE (203) 356-2345

Olin Corporation, 120 Long Ridge Road



MATERIAL SAFETY DATA

ICAL FAMILY	ic Tough Pi	MULA		TRADE NAME			
Copper	1				Alloy 1092		
RIPTION				GAS N			
Metal	/	;					
SI	ECTION II -	- NORMAL I	ANDLING	PROCEDU	RES		
AUTIONS TO SE TAKEN IN Avoid breathing du							
	•			•			
		F			•		
•							
		,			· · · · · · · · · · · · · · · · · · ·		
OSIVE ACTION ON MATERI	ALS (Metals, Pl	astic, Rubber, Et					
ECTIVE EQUIPMENT				M REQUIREM			
(Dust) Goggles					eep airborne		
•			concentrations below TLV.				
			,				
				······································			
	SECTION	I III — HAZA	RDOUS INC	REDIENTS			
SASIC MATERIAL	APPROX.	QSHA PEL	LD 50	LC 5 0	SIGNIFICANT EFFECTS		
		Dust 1.0 r			G 4		
Copper		Fume 0.1	mg/m ^o	<u> </u>	Gastro-intestinal		
			•		· ·		
	İ	Ll		<u> </u>			
	CTION IV -	FIRE AND	EXPLOSION	N HAZARD			
SE	OSHA CL	ASSIFICATION		1	FLAMMABLE LOWER UPPE EXPLOSIVE LIMITS		
SECTION NOT Applicable							
HOONT NOT					•		

Copper, dust 1 mg/m³, Fume 0.2 mg/m³ (ACGIH 1983) SYMPTOMS OF OVER EXPOSURE Dust and fume, sneezing, congestion, metallic taste, gastro-intestinal distress, chills, fever EMERGENCY FIRST-AID PROCEDURES Flush thoroughly with water. SKIN Flush with water for 15 minutes, call a physician. EYES Drink water, induce vomiting by sticking finger down throat, call a physician. INGESTION Remove victim to fresh air, call a physician. INHALATION



INGESTION

INHALATION



MERGENCY PHONE (203) in Corporation, 120 Long Ridge	Road JLC	,110N1 - 11	DENTIFICAT	ION	SAFETY D		
Silver Bearing Low							
CHEMICAL FAMILY		MULA		TRAD	ENAME		
Copper				A	Alloy 1093		
ESCRIPTION				CAS N	0.		
Metal	i	i					
SE	CTION II -	NORMAL	HANDLING	PROCEDUI	RES		
RECAUTIONS TO BE TAKEN IN H. Avoid breathing dus	ANDLING AN	D STORAGE	ske internal	lv.			
myold bicatilling das	t of fame.	. 50 1,000		- J •			
•		F. W.			.		
,	•	•	•		•		
	·	· · · · · · · · · · · · · · · · · · ·					
ORROSIVE ACTION ON MATERIA	LS (Metals, Pla	stic, Rubber, E1		N REQUIREM			
					keep airborne		
Eyes (Dust) goggles				entrations			
Other				opper dust.			
			, 101 0	opper dust.	•		
· · · · · · · · · · · · · · · · · · ·			<u></u>				
	SECTION	III — HAZA	RDOUS ING	REDIENTS			
BASIC MATERIAL	APPROX.	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS		
	T 1	Dust 1 m	r/m ³	T	T		
Copper	1	Fume 0.1			Gastro-intestinal		
76							
				ļ			
	<u></u>						
SECTION NOT		FIRE AND	EXPLOSION		DATA FLAMMABLE LOWER UPP		
Applicable	03.12.02.5			ħ	EXPLOSIVE LIMITS		
EXTINGUISHING MEDIA				· 			
Not Applicable		•					
PECIAL FIRE HAZARD & FIRE FI	GHTING PRO	CEDURES					
Not Applicable			<u></u>				
<u> </u>	SECTIO	N V – HEA	LTH HAZAR	D DATA			
Copper, Dus	t 1 mg/m3	. Fume 0.2	mg/m ³ (AC	GIH 1983)			
YMPTOMS OF OVER EXPOSURE		**					
					ausea, chills, fever		
Flush thor	oughly wi	ERGENCY FIRE	ST-AID PROCED	URES			
SKIN	J 1/1						
Flush with w	ater for 1	5 minutes,	call a physic	cian.			
	• ,	_!4!-	11 1 - 1 - 1				
NGESTION Drink water,	induce vo	miting, cal	II A DNVSICIA	Π.			

Remove victim to fresh air, call a physician.





City on Description Laws (Road SEC			•			
Silver Bearing Low (JXVgen Co	MULA		TRAD	ENAME		
Copper	1			l A	Alloy 1094		
ESCRIPTION				CAS			
Metal							
SE	CTION II -	- NORMAL	HANDLING	PROCEDU	RES		
RECAUTIONS TO BE TAKEN IN H	ANDLING AN	DSTORAGE					
Avoid breathing dust	t or furnes	. Do not to	ake internal	ly.	•		
	•			•			
		4		•			
		•		**	•		
	·						
ORROSIVE ACTION ON MATERIA	LS (Metals, Pl	estic, Rubber, E			•		
ROTECTIVE EQUIPMENT			VENTILATIO	ON REQUIREM	ENTS		
Eyes (Dust) goggl es	(Dust) goggles			As required to keep airborne			
3loves	•		concentrations below TLV for copper dust.				
Other							
			1,				
			•				
	SECTION	I III — HAZA	RDOUS INC	REDIENTS			
BASIC MATERIAL	SECTION	I III — HAZA Osha Pel	RDOUS INC	GREDIENTS	SIGNIFICANT EFFECTS		
BASIC MATERIAL	APPROX.	OSHA PEL Dust 1 mg	LD 50		•		
BASIC MATERIAL Copper	APPROX.	OSHA	LD 50		•		
	APPROX.	OSHA PEL Dust 1 mg	LD 50		SIGNIFICANT EFFECTS		
Copper	APPROX.	OSHA PEL Dust 1 mg	LD 50		SIGNIFICANT EFFECTS		
Copper	APPROX.	OSHA PEL Dust 1 mg	LD 50		SIGNIFICANT EFFECTS		
Copper	APPROX.	OSHA PEL Dust 1 mg Fume (1.1	LD SO /m3 mg/m3	LC 50	SIGNIFICANT EFFECTS Gastro-intestinal		
Copper	APPROX.	OSHA PEL Dust 1 mg Fume (L.1)	LD 50	Lc 50	Gastro-intestinal DATA		
Copper SEC	APPROX.	OSHA PEL Dust 1 mg Fume (1.1	LD SO /m3 mg/m3	Lc 50	Gastro-intestinal DATA FLAMMABLE LOWER UPP		
Copper SEC LASH POINT Not AETHOD Applicable	APPROX.	OSHA PEL Dust 1 mg Fume (L.1)	LD SO /m3 mg/m3	LC 50	Gastro-intestinal DATA		
Copper SECTION NOT APPLICABLE EXTINGUISHING MEDIA	TION IV —	OSHA PEL Dust 1 mg Fume 0.1 FIRE AND ASSIFICATION	LD SO /m3 mg/m3	LC 50	Gastro-intestinal DATA FLAMMABLE LOWER UPP		
Copper SEC LASH POINT Not AETHOD Applicable EXTINGUISHING MEDIA	TION IV —	OSHA PEL Dust 1 mg Fume 0.1 FIRE AND ASSIFICATION	LD SO /m3 mg/m3	LC 50	Gastro-intestinal DATA FLAMMABLE LOWER UPP		
Copper SECTION NOT APPLICABLE EXTINGUISHING MEDIA NOT Applicable PECIAL FIRE HAZARD & FIRE FI	TION IV —	OSHA PEL Dust 1 mg Fume 0.1 FIRE AND ASSIFICATION	LD SO /m3 mg/m3	LC 50	Gastro-intestinal DATA FLAMMABLE LOWER UPP		
Copper SECTION NOT APPLICABLE EXTINGUISHING MEDIA	TION IV —	OSHA PEL Dust 1 mg Fume 0.1 FIRE AND ASSIFICATION	LD SO /m3 mg/m3	LC 50	Gastro-intestinal DATA FLAMMABLE LOWER UPP		

THRESHOLD L	MIT VALUE	
	Copper, Dust 1 mg/m ³ , Fume 0.2 mg/m ³ (ACGIH 1983)	• • •
SYMPTOMS OF	OVER EXPOSURE	
	Dust and fume - sneezing, congestion, metallic taste, nausea, chills, fev	ver
SKIN	EMERGENCY FIRST AID PROCEDURES r lush thoroughly with water.	
EYES	Flush with water for 15 minutes, call a physician.	
INGESTION	Drink water, induce vomiting, call a physician.	
INHALATION	Remove victim to fresh air, call a physician.	TRUI 004

SECTION I - IDENTIFICATION

COPPER Alloy		
CHEMICAL FAMILY Copper	FORMULA Mixture	TRADE NAME ALLOY 1975
Red orange metallic so	lid	Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash hands with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS
Eyes	Dust - goggles	As required to keep airborne
Gloves	Impervious (if necessary)	concentrations of copper dust
Other	NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occurs	below TLV.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA Pel	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust 1 mg/m ³ Fume 0.1 mg/m ³	TD _{LO} 120 ug/kg (human)	No data	Inhalation - metal fume fever, respiratory tract irritation

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT METHOD	Not Applicable	OSHA CLASSIFICATION Non-comb	ustible solid	FLAMMABLE EXPLOSIVE LIMITS	LOWER N/A	UPPER N/A	
	EXTINGUISHING MEDIA Use extinguishing media suitable for surrounding material.						
	SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES Use NIOSH/MSHA approved positive pressure						
sel	f-contained breat	hing apparatus when	n any material is in	volved in a fir	е.		

THRESHOLD LIM	Copper dust 1 mg/m ³ , fume 0.2 mg/m ³ (ACGIH 1985-86)	
SYMPTOMS OF C	Dust and fume - sneezing, congestion, metallic taste, nausea, chi	ills, fever
	ume: Wash with EMERGENCY FIRST-AID PROCEDURES water before eating or smoking. If an irritation develops, call a phy	rsician.
EYES	Dust or fume: Flush with water for 15 minutes, call a physician.	· · · · · · · · · · · · · · · · · · ·
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physicia	in.
INHALATION	Dust or fume: Remove victim to fresh air, call a physician.	TRW-00768

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50 CARCINOGENICITY Not known to be carcinogenic Copper 120 ug/kg (human) ACUTE ORAL TDLO MUTAGENICITY Not known to be mutagenic ACUTE DERMAL LD 50 No data EYE IRRITATION Dust is irritating PRIMARY SKIN IRRITATION Dust may be irritating **ACUTE INHALATION LC 50** No data PRINCIPAL ROUTES OF ABSORPTION Inhalation of dust or fume EFFECTS OF ACUTE EXPOSURE Dust or fume: Skin, eye and mucous membrane irritation, metal fume fever, respiratory tract irritation. None expected at industrial use levels. Chronic overexposure may EFFECTS OF CHRONIC EXPOSURE cause liver and kidney effects.

SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

ACTION FOR MATERIAL RELEASE OR SPILL

Dust or Fume: Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use (See 29 CFR 1910.134). Wear goggles, coveralls. impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill, use the emergency telephone number shown on the front of this sheet.

TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

WASTE DISPOSAL METHOD

STABLE

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - SHIPPING DATA

D.O.T. CLASS Not regulated **SECTION IX - REACTIVITY DATA**

°c X UNSTABLE POLYMERIZATION **CONDITIONS TO AVOID**

Presence of carbon monoxide during melting

dust and fume - acetylene, chlorine INCOMPATIBILITY (Material to Avoid)

HAZARDOUS DECOMPOSITION PRODUCTS

copper fume

SECTION X - PHYSICAL DATA

MELTING POINT	No data	VAPOR PRESSURE N.	Α	VOLATILES	N.A.
BOILING POINT	No data	SOLUBILITY IN WATER IN	soluble	EVAPORATION RATE	N.A
SPECIFIC GRAVITY	H ₂ O - 1) No data	PH N.A.		VAPOR DENSITY (Air * 1)	N.A.
				1	

INFORMATION FURNISHED BY:

Environmental Hygiene

and Toxicology (203) 789-5436

DATE

HAZARDOUS

March 21, 1986

TRW-00769

Departs.

0908-2135

MAY OCCUR

WILL NOT OCCUR

and Toxicology (203) 789-5436

II CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904 OCEAN® Network **EMERGENCY PHONE 1-800-OLIN-91**

MATERIAL SAFETY DATA SHEET

EASTERN METAL MILL PRODUCTS CQ.

-1105 East'Street & Dedham, MA 02026

Telephone: (617) 329-1200

Date: November 25, 1985 Revised: November 1, 1989

SECTION I. MATERIAL IDENTIFICATION

Copper/Copper Alloys

See attached alloy composition sheets for alloy presence and percentages of alloying ingredients.

SECTION II. HAZARDOUS INGREDIENTS

Copper/Copper Alloys

	CAS Number		OSHA-PEL 8-hr TWA	ACG!H-TLV 3-HR TWA (1985-89)	ACGIH STEL (1986-89)
Aluminum #	(7429-90-5)	(Dust)	15 mg/m²	10 mg/m²	
	, , , , , , , , , , , , , , , , , , , ,	(Fume)	5 mg/m³	5 mg/m³	••
Antimony #	(7440-36-0)		0.5 mg/m³	8.5 mg/m³	••
Arsenic #	(7440-38-2)		0.5 mg/m ²	0.02 mg/m ³	••
Beryllium #	(7440-41-7)		0.902 mg/m³	0.002 mg/m ³	0 005*
Cadmium #	(7440-43-9)	(Dust)	0.2 mg/m ³	0.05 mg/m²	
• \$		* (Fume)	0.1 mg/m ³	0.05 mg/m ^{3*}	**
Carbonblack	(1333-86-4)	a Ağaratı	3.5 mg/m ³		
Chromium #	(7440-47-3)		1 mg/m³	0.5 mg/m ³	44
Cobalt #	(7440-48-4)		0 05 mg/m³	0.1 mg/m³	
Copper#	(7440-50-8)	(Dust)	1 mg/m³	1 mg/m³	••
		(Fume)	0.1 mg/m ³	0.2 mg/m³	••
Iron	(1309-37-1)		10 mg/m ³	5 mg/m³	
			•	(As iron oxide fume)	
Lead # O	(7439-92-1)		0.05 mg/m ³	9.15 mg/m²	**
Manganese #	(7439-98-5)	ું: (Dust)	5 mg/m²	5 mg/m³	A.
		(Fume)		1 mg/m³	3 mg/m³
Nickel#	¥(7440-02-0)	A N	1 mg/m ³	1 mg/m³	
Phosphorus #	(7723-14-0)	A. S. C.	0.1 mg/m³	0.1 mg/m²	
Silicon	(7440-21-3)	(Dust)	10 mg/m³	10 mg/m³ ©	••
		🦩 (Fume)	5 mg/m³	. **	••
Silver#	(7440-22-4)		_ 0.01 mg/m³	0.1 mg/m ³	
Sulphur Dioxide#	(7446-09-5)		€ mg/m³	5 tng/m ³	5/10 mg/m³
Tellurium #	in (13494-80-9)		0.1 mg/m ³	0.1 mg/m³	
Tin Ø	(7440-31-5)	•	2 mg/m³	2 mg/m³	0.2 mg/m ³
					(contemplated)
Zinc#	(1314-13-2)	(Dust) ①	10 mg/m³	10 mg/m³	
		(Fume)	5 nig/m³	5 mg/m ³	10 mg/m³
Zirconium	(7440-87-7)	•	5 mg/m³	5 mg/m³	10 mg/m³

^{*}Ceiling Limit

Note: antimony trioxide, beryllium, cadmium, chromium, cobalt-chromium alloy, lead and nickel have been identified as potential human carcinogens, # denotes a toxic chemical or chemicals subject to reporting requirements of Section 313 of Title III of the S.A.R.A. of 1986 and CFR Part 372.

O Value is for total dust containing no asbestos and less than 1% free silicon.

[@] Contemplated change to 0.2 STEL and 0.1 TWA

[©] Under court remand.

SECTION III. PHYSICAL DATA

Physical Form:

Solid

Specific Gravity:

The state of the s

7.45 - 9.00

Bailing Point.

Not Applicable

Vapor Density Solubility in HiO: Not Applicable insoluble

Freeze-Melt Temperature: Approximately 1290° - 2260° F Vapor Pressure:

Not Applicable

Octor:

Silver of Yellow to Red

Evaporation Rate:

Not Applicable

Oddr:

None

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point: (Method Used) Not Applicable

Extinguishing Media: See Below

Flammable Limits (LEL-UEL) Not Applicable

Auto Ignition Temp. - Not Applicable

Special Fire Fighting Procedures: Solid massive form is not combustible. Fire and expression natards are moderate when material is in the form of dust and exposed to heat, flames, chemical reaction, or in contact with powerful oxidizers. Use special mixtures of dry chemical or sand. Firefighters should wear self-contained breathing apparatus and protective clothing.

SECTION V. REACTIVITY DATA

Stability: Stable

Conditions to Avoid: Stable under normal conditions of transport and storage. Molten metal may react violently with water, Incompatibility (Materials to Avoid): Acids, bases, and oxidizers.

Hazardous Decomposition or Syproducts; Metal fume.

Hazardous Polymerization: Will not occur.

SECTION VI. HEALTH HAZARD DATA

Permissible exposure limits and threshold limit values. See Section II.

TRW-00771

Route(s) of Entry: Inhalation: Yes: Skin: Yes; Ingestion: Yes

Under normal handling conditions the solid alloy presents no significant health hezards. Processing of the alloy by dust or fume producing operation (grinding, buffing, heating, welding, etc.) may result in the potential for exposure to airporne metal particulates or fume. The exposure levels in Section II are relevant to fumes and dusts.

Effects of Overexposure:

Aluminum — Excessive exposure to aluminum fume and dust has been associated willi lung disease, but this effect is probably due to simultaneous silica exposure.

Antimony — Antimony and its compounds are irritating to the skin and mucous membranes and are systemic poisons, Effects are reported to include metallic taste in the mouth, vomiting, colic, loss of appetite and weight, cardiac problems, and diarrhea. In addition, dermatitis may result which starts as an inflammation of the hair follicles and can progress through pus formation and sloughing to leave a contracted scar.

Beryllium — Inhalation of beryllium dust or fume may result in the production of an acute or chronic systemic disease depending upon the level of exposure and the beryllium compound involved. Granulomatous lesions of the skin, liver, kidneys, spieen, and lymph nodes have been reported.

Damage to the lungs may be in both the acute and chronic forms, both of which have similar signs and symptoms. These include a relatively non-productive cough, progressive difficulty in breathing, loss of appetits, and loss of weight. The major difference between the two is the suddeness of onset and the rate of progression. In the acute form, the symptoms appear in several hours to several weaks after exposure and there is usually rapid progression of signs including dyspinea, anorexia, and extreme weight loss. Complete recovery is possible and fatal cases usually result from acute heart disease. In chronic beryllium disease, the symptoms or signs are generally delayed in their onset and are persistent in nature. They may be triggered or aggravated by stresses such as pregnancy, respiratory infection, and it moto-incisis. In the progression of the disease, symptoms of heart disease may occur.

Beryllium is also a suspected human carcinogen and has caused cancer in lacoratory animals

Cadmium — Inhalation of cadmium tumes may cause respiratory irritation with a sore, dry throat and a meranic confollowed by a cough, chest pain, and difficulty in breathing. Brenchitis, pneumonitis, 2nd pulmonary ederna have been reported as a result of the irritation of the fumes. Headaches, dizziness, loss of appetite, and weight loss have also been reported and the liver, kidneys and bone marrow may be injured by the presence of the metal.

Continued exposure to lower levels of cadmium has resulted in chronic poisoning characterized by irreversible lung

`•

damage and kidney damage. A single, high level exposure to cadmium can cause several long irritation which may be fatal. Cadmium is also a suspected human carbinogen.

Chromium — In some workers, chromium compounds act as allergens and may cause dermatitic and may also produce pulmonary sensitization. Chromic acid and chromates have a direct corrosive effect on the skin and the mucous membranes of the upper respiratory tract. Although rame, there may be the possibility of skin and pulmonary sensitization. IARC has determined that there is sufficient evidence of increased lung cancer among workers in the chromate-producing industry and possible chromium alloy workers. This determination is supported by sufficient evidence for carcinogenicity to animals and possible mutagenicity testing of Cr VI compounds.

Cobalt — Cobalt has been reported as causing hypersensitization type dermatitis in Individuals who are susceptible. Animal studies have shown that particulate cobalt is an acutely irritating substance and industrial exposures, possibly combined with small amounts of silica, are reported capable of producing serious pneumoconics is which is initially of an insidious nature.

Copper — Melting, grinding, cutting of copper may produce fumes or dust exposure and breathing these fumes or dust may present potentially significant health hazards. Fumes of copper may cause metal furne fever with flu-like symptoms and skin and hair discoloration. While industrial dermatitis has not been reported, keratinization of the hands and the soles of the feet has been reported. Systemically as well, copper dust and fume cause irritation of the upper respiratory tract, metallic tasts in the mouth, and nauses.

Iron — The inhalation of iron exide fumes or dust may cause an apparent benign pneumoconicals which is called aiderosis. This disease is reported to be disabling, but makes x-ray diagnosis of other lung conditions difficult or impossible.

Lead — Short term exposure: Lead is an accumulative poison. Inhalation effects of exposure to femes or dust of inorganic lead may not develop quickly. Symptoms may include decreased physical fitness, fatigue, sieep disturbance, headache, aching bones and muscles, constipation, abdominal pains, and decreasing appetite. The effects are reversible and complete recovery is possible. Inhalation of large amounts of lead may lead to seizures, come, and death.

Lead — Long term exposure: Long term exposure can result in a buildup of lead in the body and more severe symptoms. These include anemia, pale skin, a blue line at the gum margin, decreased handgrip strength, abdominal pain, severe constipation, nausea, vomiting, and paralysis of the wrist joint. Prolonged exposure may also result in kidney damage, if the nervous system is affected, usually due to very high exposures, the resulting effects include severe headache, convulsions, coma, delirium, and death. Alcohol ingestion and physical exertion may bring on symptoms. Continued exposure can result in decreased fertility and/or increased chances of miscarriage or birth defects.

Manganese — Chronic manganese polsoning may result from inhalation of dust or fume. The central nervous system is the chief site of the injury, and there also may be adverse blood and kidney effects. Chronic manganese poisoning is not a fatal odisease although it is extremely disabling. Some individuals may be hypersusceptible to manganese. Freshly formed manganese fume has caused fever and chills similar to metal fume fever.

Nickel — The most common ailment arising from contact with nickel or its compounds is an allergic dermatitis known as "nickel itch" which usually occurs when the skin is moist. Generally nickel and most salts of nickel do not cause systemic poisoning, but nickel has been identified as a suspected carcinogen. There can also be adverse effects to the lungs and need cavities.

Silicon — Accumulation in lungs may be responsible for benign pneumoconicals, but is not considered to be responsible for pulmonary functional impairment or respiratory symptoms.

Tin — The inhalation of inorganic tin fumes or dust may cause an apparent benign pneumoconics is called stannos is which is reported not to be disabling.

Zinc (as Oxide) — Zinc is very low in toxicity but inhalation of times may cause "metal fume fever." Onest of symptoms may be delayed 4-12 hours and include irritation of the nose, mouth and throat, cough, stomach pain, headache, nausea, vomiting, metallic taste, chills, fever, pains in the muscles and joints, thirst, bronchitis or pneumonia and a bluish tint to the skin. These symptoms go away in 24-46 hours and leave no effect.

Note: Antimony trioxide, baryllium, cadmium, chromium, cobalt-chromium alloy, laed and nickel have been identified as potential human carcinogens.

Emergency First Aid Procedures:

Eye Contact Flush well with running water to remove particulate. Get medical Atlention.

Skin Contact Vacuum off excess dust. Wash well with soap and water.

Inhalation Remove to fresh air. Get medical attention.

Ingestion Seek medical attention if large quantities of material have been ingested.

0908-2138

SECTION VII. PRECAUTIONS FOR SAFE HANDLING OR USE

Steps to be Taken in Case Malarial is Released or Spilled: No special precautions are necessary for spills of bulk material. If large quantities of dust are spilled, remove by vacuuming or well sweeping to prevent heavy concentration of airborne dust. If liquids (acids or bases) containing solubilized metal are spilled evacuate unprotected personnel from area. Absorb liquid by means of vermiculite, dry sand or similar material. Follow federal, state, and local regulations concerning the disposal of waste.

Waste Disposal Method: Disposa of in accordance with federal, state, and local regulations. Cleanup personnel should wear respirators and protective clothing. Ventilate area of release.

Precautions to be Taken in Handling and Storing: Store material away from incompatible materials and keep dust from sources of ignition.

Other Precautions: See all other sections of this MSDS.

SECTION VIII. CONTROL MEASURES

Respiratory Protection: If exposure above the PEL or TLV, NIOSH approved respirator for tume or dust, dependent upon the source of airborne contaminant.

Ventilation: Required if dust or fume created in handling or working on this material.

Local Exhaust: Required if dust or fume created in handling or working on this material

Mechanical (general): As above to reduce airborne dust or fume levels.

Protective Gloves: Required for melt, grind, cut or weld operations. Select glove approved for the specific operation.

Eye Protection: Required for melt, grind, out, or weld operations. Minimum requirement of safety glasses with side chiefds for these operations. Melting and welding may require special eye protection including face shields and specially tinted glass. Grinding operations may also require face shields.

Other Protective Clothing or Equipment: As required for the work done on or with the metal.

Work/Hygiene Practices: As required for the work done with lead bearing materials. Meet requirements of the OSHA lead standard where necessary. Always evaluate the jobs done on this product in accordance with OSHA or relevant state federal, or local standards.

IMPORTANT

LIABILITY DISCLAIMER

The information contained in this Material Safety Data Sheet (MSDS) is believed to be correct as it was obtained from sources we believe are reliable. Including: "Threshold Limit Values & Biological Exposure Indices for 1988-89" (American Conference of Government & Industrial Hygienists), Air Contaminants—Permissible Exposure Limits (Title 29, Code of Federal Regulations, part 1910.1000—OSHA), and OSHA (Cleveland Area Office) letter of 6/15/89. However, no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications, hazards connected with the use of the material, or the results to be obtained from the use thereof. User assumes all risks and liability of any use, processing or handling of any material, variations in methods, conditions and equipment used to store, handle or process the material and hazards connected with the use of the material are solely the responsibility of the user and remain at his sole discretion.

Compliance with all applicable federal, state, and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe work place, to examine all aspects of its operation and to determine if or where precautions, in addition to those described herein, are required.

COPPER/COPPER ALLOYS; SCRAP

MSDS CCA

Alloy Compositions (For MSDS Use Only)

0908-2140

Date: 9/14/89 Rev.: 1

	_	Ço	mponents (Pe	rcent)		The state of the s	
Alloy	Copper	Zirconium	Tin	Manganese	Silicon	Cadmium	Chronium
150	REM	*1	•	4.		•	_
1622, 165	REM	•	*1	•	•	.6-1.2	<i>2</i> •••
189, 1895	REM	-	* 1	*1	*1	•	_ 1
1814, 18150	REM	· *1	•	•	-	-	.5-1.5
182	REM	•	•	~	-	. •	.8-1.2
18135	RÉM	•	•		•	.25	.26
Allov	Copper	Phosphorus	Tellurium	Sulfur	Silver	Zinc	Lead
101, 102, 110	100	•	-	•	•	-	- .
103, 122	REM	*1	-	•	-	-	•
104, 105, 107	REM		•		* 1	-	• 4
1450, 1455, 1457		*1	*1	-	-	30	•
147	REM	. —	-	. *1	•	•	- 1
1870, 1875	REM	- <u>-</u>	-	•	•		.8-1.2
210, 220, 226	REM	•	•	-	•	4-14	•
230, 234, 240	REM	. •	• •	-	•	14-21.5	•
260, 270, 272	REM	, -	•	-	£	28.5 -3 8	•
Alloy	Copper	Linc	<u>Lead</u>	Tin	Phosphorus	<u>Mickel</u>	Tellurium
314. 316	REM	8.5-12.5	1.3-2.5	•	•	.7-1.2	•
318	87-91	REM	~	•	*1	.7-1.2	*1
340, 344, 345	60-65	REM	.5-2.5	•	•	•	•
350, 353, 360	60-63	REM	.8-3.7	•		•	.
377, 365, 3658	55-60.5	REM	1.5-3.8		-	▶-	•
462, 464, 485	REM	35-41	1.3-2.2	.5-1.0	-	•	~
507, 544	REM	0-4.5	0-4.5	1.5-4.5	*1	3	• · · · · · · · · · · · · · · · · · · ·
Alloy	Copper	Zinc	Manganese	<u>Nickel</u>	Silicon	Alustaus	· •
610, 6101	REM	-	_	-	•	7.0-8.5	
634, 642	REM	-	~	-	.25-2.2	2.8-8.5	
647, 651	REM	•	*1	1.5-2.2	.4-1.8		TRW-0077
Alloy	Copper	Zinc	Lead	Tin	Iron	Manganese	Silicon
F36 #36	64 44	6.0 24	<u> </u>				
675, 676	\$7-60	REM	0 0	.5-1.5	.4-2.0	* <u> </u>	2025
655, 656, 651 6733	rem 60-63	0-1 REM	98 .4-1.0	•	-	5-1.4 2 G.3 K	2.8-3.6 6_1 5
yr 30	, •••-07	file!")	. 7 - 1 10	-	-		



PLAMMABILITY REACTIVITY

MATERIAL SAFETY DATA

EMERGENCY PHONE (203) 356-2345

		•	
Corporation, 120 Long Ridge Road	SECTION I - ID	SEN	TIFICATION
ford Connecticut 08904	3ECTION 1 - 10	EI	HIFICATION

Stamford Connecticut 06904	300110111 13011	
CHEMICAL NAME & SYNONYMS		
Copper Way High Residu	ual Deoxidized Phos	phorous Tubing, ingot, plate
CHEMICAL FAMILY	FORMULA	TRADE NAME
Copper		Copper Alloy DHP
DESCRIPTION		CAS NO.
Metal		·

SECTION II — NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Where copper metal is fine cut, avoid breathing dust or fumes. Do not take internally.

CONNOS	CONTOCTAS WELLOW ON MY I SUITED IMETER LIGHT LIGHT SHIT					
PROTECT	IVE EQUIPMENT	VENTILATION REQUIREMENTS				
Eyes Gleves Other	(Dust) Goggles	As required to keep airborne concentrations below TLV.				

SECTION III — HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROX.	OSHA PEL	LD 50	LC 90	SIGNIFICANT EFFECTS
Copper		Dust 1.0 r Fume 0.1	ng/m ³ ng/m ³		Gastro-intestinal

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not METHOD Applicable	OEHA CLASSIFICATION	PLAMMABLE EXPLOSIVE LIMITS	LOWER	UPPER
EXTINGUISHING MEDIA				
Not Applicable				
SPECIAL FIRE HAZARD & FIRE	FIGHTING PROCEDURES			
Not Applicable				

THRESHOLD L		
•	Copper, dust 1 mg/m ³ , Fume 0.2 mg/m ³ (ACGIH 1983)	
SYMPTOMS OF	Dust and fume, sneezing, congestion, metallic taste, gastro-intestinal distress, chills, fever	
	EMERGENCY FIRST-AID PROCEDURES	
SKIN	Flush with water for 15 minutes, call a physician.	}
EYES	Flush with water for 15 minutes, call a physician.	TRW-0077
INGESTION	Drink water, induce vomiting by sticking finger down throat, call a ph	nysician.
INHALATION	Remove victim to fresh air, call a physician.	0908-2141

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50

CARCINOGENIC Not known to be carcinogenic

TD_{LO} Copper 120 mg kg (human)

MUTAGENIC

Not known to be mutagenic

CUTE DERMAL LD 80

EVE INDITATION Dust is irritant PRIMARY SKIN IRRITATION

Dust is irritating

CUTE INHALATION LC 10

PRINCIPAL ROUTES OF ASSORPTION

Inhalation of dust or fume

EFFECTS OF ACUTE EXPOSURE

Congestion, gastro-intestinal distress, chills, fever

EFFECTS OF CHRONIC EXPOSURE

May cause liver, kidney or spleen damage, anemia

SECTION VII - SPILL OR LEAKAGE PROCEDURES (Control Procedures)

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Dust or fume - Wear NIOSH/MSHA approved dust and fume respirator. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134). Shovel or sweep up and place in an approved DOT container and seal. Wash all contaminated clothing before reuse. .

WASTE DISPOSAL METHOD

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - REACTIVITY DATA

STABLE X UNSTABLE

MAY OCCUR

WILL NOT OCCUR

CONDITIONS TO AVOID

INCOMPATABLLITY DA

Dust and fume - acetylene, chlorine

HAZARGOUS DECOMPOSITION PRODUCTS

Copper fume

SECTION IX - PHYSICAL DATA

MELTING POINT 1949 F	VAPOR PRESSURE	VOLATILES
SCILING POINT	SOLUBILITY IN WATER Insoluble	EVAPORATION RATE
SPECIFIC GRAVITY(H20 41)	601	VAPOR DENSITY(AIr = 1)
DENSITY 0.323 pounds/m ³		

INFORMATION FURNISHED BY:

A. L. Gaudreau (203) 789-5434

DATE

July 30, 1984

Department of Environmental Hygiene and Toxicology

CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904

OCEANSM Network **EMERGENCY PHONE (203) 356-2345** 0908-2142

TRW-00776

U.S. DEPARTMENT OF LABOR Occupational Safety & Health Administration MATERIAL SAFETY DATA SHEET

SEC	TION I	
MANUFACTURER'S NAME AUDRESS NAME PLOCE NAME PROPERTY AUDRESS NAME PLOCE NAME PROPERTY	Inc	EMERGENCY TELEPHONE NO.
CHEMICAL NAME AND SYNONYMS	RI 02	TRADE NAME AND SYNONYMS
CHEMICAL FAMILY	FORMULA	Cu Cu
	DOUG II	NGREDIENTS

SECTION	11	HAZAR	DOUS INGREDIENTS	<u>-</u>	
PAINTS, PRESERVATIVES, & SOLVENTS	*	TLV (Units)	ALLOYS AND METALLIC COATINGS	*	TLV (Units)
PIGMENTS]	BASE METAL		
CATALYST	1		ALLOYS	1	
VEHICLE	1		METALLIC COATINGS		
SOLVENTS	1		FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES	T		OTHERS		
OTHERS	1				
HAZARDOUS MIXTURE	S OF C	THER LIQ	UIDS, SOLIDS, OR GASES	*	TLV (Units)
	iot	appli	cable		
				_	

	SEC	TION III	PHYSICAL DATA	
BOILING POINT (F.)		4703 F	SPECIFIC GRAVITY (H20=1)	8.93 e
VAPOR PRESSURE (mm Hg.)	LO mm e	1879 C	PERCENT VOLATILE BY VOLUME (%)	NA
VAPOR DENSITY (AIR=1)		NA	EVAPORATION RATE	NA
SOLUBILITY IN WATER		insolub	le	
APPEARANCE AND DOOR SO	olid meta		r colored	

SECTION IV FIRE ANI	EXPLOSION HAZARD	DATA	
FLASH POINT (Method used) NA	FLAMMABLE LIMITS	Lei	Uel
EXTINGUISHING MEDIA			-
SPECIAL FIRE FIGHTING PROCEDURES NA			
UNUSUAL FIRE AND EXPLOSION HAZARDS			
No unusual hazards, will react	as most metals.	TD 11	7_00775

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

20 C

	<u></u>				
	SE	CTION V	V HEAL	TH HAZARD	DATA
THRESHOLD LIMIT VA	NA				
EFFECTS OF OVERFXP	OSUBS	applic	able in	n manufactu	red state, only if
transfer	red to a me				
EMERGENCY AND FIRE	T AID PROCEDURES				······································
					
	**************************************	SECTIO	N VI R	EACTIVITY D	ATA
STABILITY	UNSTABLE		CONDITION	S TO AVOID	
	STABLE	Y			
INCOMPATABILITY (M	14	ot com	patable	e with orga	nic acids or acetylene
HAZARDOUS DECOMP	OSITION PRODUCTS				
HAZARDOUS	MAY OCCUR			CONDITIONS TO	AVOID
POLYMERIZATION	WILL NOT O	:CUR	xx		
				* * * * * * * * * * * * * * * * * * * 	
	- 				
				OR LEAK PRO	OCEDURES
STEPS TO BE TAKEN I	N CASE MATERIAL IS	RELEASED O	A SPILLED		
No speci	al requirem	ents			
WASTE DISPOSAL MET	HOD				
Recycle	material			·	· · · · · · · · · · · · · · · · · · ·
		 -			
•	SECTION	VIII SP	ECIAL P	ROTECTION	INFORMATION
RESPIRATORY PROTECTION	TION (Specify type)			 	
VENTILATION	LOCAL EXHAUST	N.A	<u> </u>		SPECIAL NA
	MECHANICAL (Gen			•	OTHER NA
PROTECTIVE GLOVES				EYE PROTECTION NA	•
OTHER PROTECTIVE E	QUIPMENT				
				CIAL PRECAU	TIONS
PRECAUTIONS TO BE	- '				
Keep awa	y from orga	inic or	r acety	lene durin	g handling and storing
OTHER PRECAUTIONS	·				
					

MATERIAL SAFETY DATA SHEET

<u> </u>	1250 Terminal Tower, Cleveland, Ohio 44113, 216/621-6428			
Product Name:	TRU-PLATE OS COMPONENTS	. 		Emergency Phone No.: 216/441-4900
Plant Address:	2910 HARVARD AVENUE	CLEVELAND, O	H 44105	Chemtrec Phone No. 800/424-9300

Prepared By:						teers Deter			d Date:	500
riepaieu by:	TSCA	COORDINATO	OR		ų.	tesue Date:	/90 .	UAAM	5	/91
	•	INGREDI	H CHA STHE	AZARD	OUS COM		•			
		N	isterial		÷.		%	TLV	C.A.S. #	Suspect Caranegen
	COPPE	R SULFATE	[SARA 3	13 CHE	ICAL]		35- 45	1*	7758- 99-8	NO
		٠	• • • • • • • • • • • • • • • • • • •	i partie	•			mg/ _M 3		
			سو يود. د د د	مارن <u>ي</u> ، د د د د د د د د د د د د د د د د د د د						
			ر مورههای از است. در مورههای از است. در موره این طع	Service Services	ا المحرد					
			e e e e e e e e e		,					
,	· · · · · · · · · · · · · · · · · · ·				······································				·	
					*A\$ (OPPER			,	
		_ /*	PHYE	SICAL D	ATA			.+	<u> </u>	
Boiling Point:	NA ·	Freezing Point	. NA	Sp	solfic Gravity:	UK	рН	:	NA	
Vapor Pressure at 20°C:	NA	Vapor Density	(Air = 1): NA	%\	/olatiles by Vo	lume: NA	Od	lor;	NONE	
Evaporation Rate (Butyl	Acetate = 1)	NA	•	80	ubility in Wate	r: APPRE	CIABL	.E		
Appearance and Form:		LIGHT	F BLUE-WHI	TE CRY	STALS					
		FIR	E AND EXPL	OSION	HAZARD I	PATA			_	
Flash Point:	·	NA			Fiammable	Limits in Alr: Uppe				
Test Method:		NA	······································		% By Volum			NA		
Extinguishing Media:		NA								
Special Fire Fighting Pr	ocedures:	NA	,	·		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
Unusual Fire and Explo	sion Hazardi	NONE						T	RW-00	779
DOT Classification:	CLASS	9	UN-:	3077	Note:	UK = Unknown	NA :	- Not Ap	plicable	

THIS PRODUCT SAFETY DATA SHEET IS OFFERED SOLELY FOR YOUR INFORMATION, CONSIDERATION AND INVESTIGATION.

-McGEÁN-ROHCO, INC. PROVIDES NO WARRANTIES, EITHER EXPRESS OR IMPLIED, AND ASSUMES NO RESPONSIBILITY FOR ACCURACY OR COMPLETENESS OF THE DATA CONTAINED HEREIN.

TRW-00780

STORE IN A COOL, DRY AREA

Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing.

Shipbuilding,	and S	hipbreakir	ng (29 CFR 1915, 1916, 1917)		
		SECT	ION I		
MANUFACTURER'S NAME			EMERGENCY TELEPHO	NE NO.	
HARSTAN CHEMICAL CORPORA			212-435-8225-	6 - 7 -	8
ADDRESS Number, Street, City, State, and ZIP Co 1247 38th Street, Brookly	ode) N	N. Y.			
CHEMICAL NAME AND SYNONYMS Copper Sulfate Solution CHEMICAL FAMILY			TRADE NAME AND SYNONYMS		
CHEMICAL FAMILY Salts		1	FORMULA CUSO4		
SECTION	111 -	HAZAF	RDOUS INGREDIENTS		
PAINTS, PRESERVATIVES, & SOLVENTS	×	TLV (Units)	ALLOYS AND METALLIC COATINGS	×	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		1
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES	<u> </u>		OTHERS		
OTHERS	<u> </u>	<u> </u>			
HAZARDOUS MIXTURE	S OF (OTHER LIC	OUIDS, SOLIDS, OR GASES	*	TLV (Units)
Copper	Sul	fate I	Pentahydrate	22.	В
Sulfuri	c A	cid		2.	2
Balance	wa	ter		- - - - - - - - - -	
SEC	TIOI	N III - P	HYSICAL DATA		
DOILING POINT (°F.)		N.A.	SPECIFIC GRAVITY (H2O=1)		164
APOR PRESSURE (mm Hg.)		N.A.	PERCENT, VOLATILE BY VOLUME (%)	N.	
APOR DENSITY (AIR=1)		N.A.	EVAPORATION RATE		.A.
OLUBILITY IN WATER	7	mplete			
APPEARANCE AND ODOR blue liqui	d,	odorle	SS		
SECTION IV -	FIR	E AND E	XPLOSION HAZARD DATA		
LASH POINT (Method used) NONE			FLAMMABLE LIMITS Lel		Uel
XTINGUISHING MEDIA NONE			_ :		
PECIAL FIRE FIGHTING PROCEDURES NONE					
					•
JNUSUAL FIRE AND EXPLOSION HAZARDS				TF	W-007
NONE					1

		S	ECTION	i V	· HEA	ALTH HAZARD DATA
THRESHOLD LIM	IT VALU	E N.	Α.			
EFFECTS OF OVE	REXPOS	URE	ld sk	 in	irri	tant
			AU SK		<u> </u>	care
EMERGENCY AND Flush wit rinse tho	h wat rough	er. If	swal	104	ved,	induce vomiting. If splashed in eyes
			- 			
			SECTIO	י אכ	VI - R	EACTIVITY DATA
STABILITY	UNST	ABLE	<u> </u>	CO	MOITION	NS TO AVOID
	STAB	LE	Y			
INCOMPATABILIT	∨ (Materi	als to avoid)	·	.		
HAZARDOUS DEC	OMPOSIT	TION PRODUC	CTS			
HAZARDOUS		MAY OCCUP	1			CONDITIONS TO AVOID
POLYMERIZATION	'	WILL NOT C	CCUR		Y	
	A					
						OR LEAK PROCEDURES
STEPS TO BE TAK	clea	ASE MATERIA	al is rel	.EAS	F1	ush and mop up.
WASTE DISPOSAL	METHOD	Foll	ow loc	cal	reg	ulations.
						·
3						
DEEDIBATORY DE				SPE(CIALP	ROTECTION INFORMATION
RESPIRATORY PR		L EXHAUST	pe)			SPECIAL
VENTILATION	<u> </u>					
		ANICAL (Gen	eral)	G	ener	al Ventilation HER
PROTECTIVE GLO Rubber OTHER PROTECTION		es				Face shield
Rubber	aproi	PMENT N				
		SE	CTION	IX	· SPE	CIAL PRECAUTIONS
PRECAUTIONS TO	BE TAK					closed containers.
Jedio at II		LCC CEM	-cract	440	3 411	Closed Conculrations,
OTHER PRECAUTI	ons No	one				
BAG5 (2)						

PAGE (2)

Form OSHA-20 Rev. May 72

U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

Form Approved OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

			g (29 CFR 1915, 1916, 1917)		· · · · · · · · · · · · · · · · · · ·
		SECT	ION I		
MANUFACTURER'S NAME			EMERGENCY TELEPHO	NE NO.	
Welder Johingory Inc.	5- #-S		(23/2001/2 60 -9100		
ADDRESS (Number, Street, City, State, and ZIP C 47-16 Austel Place, Long J CHEMICAL NAME AND SYNONYMS		d City.	New York 11101		
_			TRADE NAME AND SYNONYME	T327	
COPPER Sulphate-Inorganic	Salt	Mixture	FORMULA		
SECTION	N 11 .	ΗΔΖΔΕ	RDOUS INGREDIENTS		
PAINTS, PRESERVATIVES, & SOLVENTS	×	TLV	ALLOYS AND METALLIC COATINGS	×	TLV
PIGMENTS	+	(Units)	BASE METAL	+~	(Units)
CATALYST	1		ALLOYS		
VEHICLE	1		METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURI	ES OF	OTHER LI	DUIDS, SOLIDS, OR GASES	*	TLV (Units)
					
		·			t
				_	
					L
SE	CTIO	N 111 - 1	PHYSICAL DATA		
BOILING POINT (F.)	T		SPECIFIC GRAVITY (H2O+1)		
VAPOR PRESSURE (mm Hg.)			PERCENT, VOLATILE BY VOLUME (%)		
VAPOR DENSITY (AIR=1)			EVAPORATION RATE		
SOLUBILITY IN WATER					
APPEARANCE AND ODOR Bluish to	Gre	enish g	granular mixture.		
SECTION IV	- FIR	E AND	EXPLOSION HAZARD DATA		
FLASH POINT (Method used)			FLAMMABLE LIMITS La	工	Uel
EXTINGUISHING MEDIA					
SPECIAL FIRE FIGHTING PROCEDURES					
				-	
UNUSUAL FIRE AND EXPLOSION HAZARDS				TRW.	-00783
				*	

	S	SECTION V	/ - HEA	LTH HAZARD DATA	
THRESHOLD LI	MIT VALUE 1 M	G/M ³ as	copper	sulphate.	
EFFECTS OF O	PEREXPOSURE			rritation.	
SMEDOS NOW A					
=	NO FIRST AID PROCED		l	clean water. For eyes, flush	
thorough	iv with clean w			ures. Ger menical arrention	
cnorough	ly with clean w	acer tor	ודים כד	utes. Get medical attention.	
cnorough	ly with clean w	ater for	וואש כו	utes. Get medical attention.	
cnorough	ly with clean w	atel IOI	IJ WIN	utes. Get medical attention.	
cnorough	ry with clean w			REACTIVITY DATA	·
	UNSTABLE	SECTIO	N VI - F		
		SECTIO	N VI - F	REACTIVITY DATA	
STABILITY	UNSTABLE	SECTION	N VI - F	REACTIVITY DATA	
STABILITY	UNSTABLE STABLE	SECTION	N VI - F	REACTIVITY DATA	
STABILITY	UNSTABLE STABLE LITY (Materials to avoid)	SECTION	N VI - F	REACTIVITY DATA	
STABILITY	UNSTABLE STABLE LITY (Materials to avoid) DECOMPOSITION PRODU	SECTION	N VI - F	REACTIVITY DATA	

SECTION VII - SPILL OR LEAK PROCEDURES					
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Sweep up and package					
WASTE DISPOSAL METHOD Sispose	of salts and solutions in accordance with local				
	atment of copper containing wastes.				

		ROTECTION INFORMATION		
RESPIRATORY PR	OTECTION (Specify type) Approved dust	respirator		
VENTILATION LOCAL EXHAUST		SPECIAL		
	MECHANICAL (General) Yes	OTHER		
PROTECTIVE GLO Rubber or p	EVE PROTECTION Chemical goggles			
OTHER PROTECTIVE EQUIPMENT Full cover work or chemical resistant clothes.				

SECTION IX - SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	
Store in a dry place. Keep container closed when not in use.	
•	
OTHER PRECAUTIONS	

PAGE (2)

GPO \$34-110

Form OSHA-20

0908-2150



INHALATION

EMERGENCY PHONE (203) 356-2345

HEALTH 2 0 REACTIVITY
HEALTH 2 HAZARD RATING

MATERIAL HAZARD RATING SAFETY DATA

	• 50	/5:	D)	•	
Copper, deoxidized,	Low Phos	phorous (DL	ir)	TRADI	E NAME
The state of the s					lloy 120
ESCRIPTION				CAS N	
Metal	1	ŧ			
\$57	TION II -	NORMALI	ANDLING	PROCEDUR	PEC
RECAUTIONS TO SE TAKEN IN HA Avoid breathing dust	MOLING AN	D STORAGE			
	•	•			
		* * * * * * * * * * * * * * * * * * *			
ORROSIVE ACTION ON MATERIAL	C (Manala C)				
ROTECTIVE EQUIPMENT				N REQUIREM	ENTS
Ive (Dust) Goggles			4		eep airborne
giones (Diffat) Goggies				ntrations b	
Other					
			'		
			4		
	SECTION	III – HAZA	RDOUS ING	REDIENTS	
BASIC MATERIAL	APPROX.	OSHA PEL	LD 50	LC 90	SIGNIFICANT EFFECTS
		Dust 1.0	ng/m ³		Contro intentinal
Copper	 	Fume 0.1	mg/m ^o	<u></u>	Gastro-intestinal
<i>"</i>					
سندوي بمناهم والمناهم والمناهم والمناهم والمناهم والمناهم والمناهم والمناهم والمناهم والمناهم والمناهم والمناهم					
				!	
CECT.	CION IV	FIDE AND	EVPLOSION	HAZABO	DATA
11 - 4			EXPLOSION		
LASH POINT NOT		FIRE AND	EXPLOSION	10	
LASH POINT NOT METHOD Applicable EXTINGUISHING MEDIA			EXPLOSION	10	LAMMABLE LOWER UPPER
LASH POINT NOT METHOD Applicable EXTINGUISHING MEDIA NOT Applicable	OSHA CL	ASSIFICATION	EXPLOSION	10	LAMMABLE LOWER UPPER
FLASH POINT NOT METHOD Applicable EXTINGUISHING MEDIA NOT Applicable PECIAL FIRE HAZARD & FIRE PIC	OSHA CL	ASSIFICATION	EXPLOSION	10	LAMMABLE LOWER UPPER
LASH POINT NOT METHOD Applicable EXTINGUISHING MEDIA NOT Applicable	OSHA CL	ASSIFICATION	EXPLOSION	10	LAMMABLE LOWER UPPER
LASH POINT NOT METHOD Applicable EXTINGUISHING MEDIA NOT Applicable PECIAL FIRE HAZARD & FIRE PIC	OSHA CL	ASSIFICATION			LAMMABLE LOWER UPPER
ELASH POINT NOT METHOD Applicable EXTINGUISHING MEDIA NOT Applicable PECIAL FIRE HAZARD & FIRE PIC NOT Applicable	SECTIO	CEDURES	LTH HAZAR	D DATA	LAMMABLE LOWER UPPER
PLASH POINT NOT METHOD Applicable EXTINGUISHING MEDIA NOT Applicable PECIAL FIRE HAZARD & FIRE PIO NOT Applicable THRESHOLD LIMIT VALUE Copper, dust	SECTION 1 mg/m ³	CEDURES ON V — HEAI	LTH HAZAR	D DATA	LAMMABLE LOWER UPPER EXPLOSIVE IMITS
PLASH POINT NOT METHOD Applicable EXTINGUISHING MEDIA NOT Applicable PECIAL FIRE HAZARD & FIRE PIO NOT Applicable THRESHOLD LIMIT VALUE COPPER, dust	SECTIO	CEDURES ON V — HEAI Fume 0.2 in the contract of the contract	LTH HAZAR mg/m³ (ACC	D DATA	LAMMABLE LOWER UPPER EXPLOSIVE IMITS
PLASH POINT NOT METHOD Applicable EXTINGUISHING MEDIA NOT Applicable PECIAL FIRE HAZARD & FIRE PIO NOT Applicable THRESHOLD LIMIT VALUE Copper, dust	SECTIO 1 mg/m ³ -intestina	N V — HEAI Fume 0.2 in the contract of the co	LTH HAZAR mg/m³ (ACC ne, sneezing hills, fever	D DATA GIH 1983)	LAMMABLE LOWER UPPER EXPLOSIVE IMITS
PLASH POINT NOT METHOD Applicable EXTINGUISHING MEDIA NOT Applicable PECIAL FIRE HAZARD & FIRE PIO NOT Applicable CHRESHOLD LIMIT VALUE Copper, dust EXMPTOMS OF OVER EXPOSURE taste, gastro-	SECTIO 1 mg/m ³ intestina	PN V — HEAI Fume 0.2 I Oust and fund distress, compared to the compared to t	LTH HAZAR mg/m³ (ACC	D DATA GIH 1983)	LAMMABLE LOWER UPPER EXPLOSIVE IMITS
ALASH POINT NOT METHOD Applicable EXTINGUISHING MEDIA NOT Applicable PECIAL FIRE HAZARD & FIRE PIO NOT Applicable CHRESHOLD LIMIT VALUE COPPER, dust	SECTIO 1 mg/m ³ intestina EM ghly with	PURES ON V — HEAI Oust and fund distress, commence first water.	TH HAZAR mg/m³ (ACC ne, sneezing hills, fever	D DATA GIH 1983) c, congestio	LAMMABLE LOWER UPPER EXPLOSIVE IMITS

Remove victim to fresh air, call a physician.



EMERGENCY PHONE (203) 356-2345

Olin Corporation, 120 Long Ridge Road

AMMABILITY
0 REACTIVITY
HEALTH HAZARD RATING
SPECIAL

MATERIAL SAFETY DATA

	_	-			
. 06904			SECTION I -	_ INENTI	FICATION
			366110111-	- 1061111	

Stamford, Conn. 06904	SECTION I - IDENTIFICATION		
CHEMICAL NAME & SYNONYME			
Copper, Electroly	rtie Tough Pitch (ETP)		ļ
CHEMICAL FAMILY	FORMULA	TRADE NAME	
Copper		Alloy 1092	
DESCRIPTION		CAS NO.	
Metal			
	SECTION II - NORMAL HAND		
Avoid breathing d	n handling and storage lust or fumes. Do not take int	ernally.	

Avoid breathing dust or fumes. Do not take internally.				
CORROSIV	E ACTION ON MATERIALS (Metals, Pla	eric, Rubber, Etc.)		
PROTECTIV	VE EQUIPMENT	VENTILATION REQUIREMENTS		
Eyes	(Dust) Goggles	As required to keep airborne		
Concentrations below TLV.				

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROX.	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper		Dust 1.0 r Fume 0.1	ng/m ³ mg/m ³		Gastro-intestinal
			,		·

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT NOT METHOD Applicable	OSHA CLASSIFICATION	FLAMMABLE LOWER EXPLOSIVE LIMITS	UPPER
Extinguishing media Not Applicable			
SPECIAL FIRE HAZARO & FIRE Not Applicable	FIGHTING PROCEDURES		

THRESHOLD LI	Copper, dust 1 mg/m ³ , Fume 0.2 mg/m ³ (ACGIH 1983)
	Dust and fume, sneezing, congestion, metallic taste, gastro-intestinal distress, chills, fever
SKIN	EMERGENCY FIRST-AID PROCEDURES Flush thoroughly with water.
EYES	Flush with water for 15 minutes, call a physician.
INGESTION	Drink water, induce vomiting by sticking finger down throat, call a physician.
INHALATION	Remove victim to fresh air, call a physician.

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 88

CARCINGGENIC Not known to be carcinogenic

TDLO Copper 120 mg kg (human)

MUTAGENIC

Not known to be mutagenic

MAL LO IN

EVE IMPRITATION Dust is irritant PRIMARY SKIN IRRITATION

Dust is irritating

acute inhalation le 📾

CIPAL ROUTES OF ASSORPTION

Inhalation of dust or fume

EPPRETE OF ACUTE EXPOSURE

Congestion, gastro-intestinal distress, chills, fever

EPPRETE OF CHRONIC EXPOSURE

May cause liver, kidney or spleen damage, anemia

SECTION VII - SPILL OR LEAKAGE PROCEDURES (Control Procedures)

Dust or fume - Wear NIOSH/MSHA approved dust and fume respirator. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134). Shovel or sweep up and place in an approved DOT container and seal. Wash all contaminated clothing before reuse.

WASTE DISPOSAL METHOD

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - REACTIVITY DATA

MAY OCCUR MAZAROGUE XUNSTABLE POLYMERIZATION WILL NOT OCCUR CONDITIONS TO AVOID

INCOMPATABILITY (Meanle) To Areld

Dust and fume - acetylene, chlorine

AZARGOUS DISCOMPOSITION PRODUCTS Copper fume

SECTION IX - PHYSICAL DATA

MELTING POURT 1949°P	VAPOR PRESSURE		VOLATILES
SOILING POINT	SOLUGILITY IN WATER	Insoluble	EVAPORATION RATE
SPECIFIC GRAVITY(H20 =1)	900		VAPOR DENEITY(Alr = 1)
DENSITY .322 pounds	/m ³		

INFORMATION FURNISHED BY:

A. L. Gaudreau (203) 789-5434

DATE

September 4, 1984

Department of Environmental Hygiene and Toxicology

CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904 **EMERGENCY PHONE (203) 356 - 2345**

0908-2153



DATE: 3/26/85

REV. DATE: 4/21/86

REVISION NO.: 2

MATERIAL SAFETY DATA SHEET

SECTION 1

MANUFACTURER'S NAME:

HUSSEY COPPER LTD.

ADDRESS:

Washington Street LEETSDALE, PA. 15056

EMERGENCY PHONE NO.:

412-857-4200

CHEMICAL NAME AND SYNONYMS:

COPPER NICKEL

TRADE NAME AND SYNONYMS:

Cupro Nickel, 90/10, 70/30, CDA Alloy 706, 715

CHEMICAL FAMILY:

COPPER AND NICKEL

	SEC	TION 11 - HAZ	ARDOUS INGREDIENTS	
INGREDIENT	706 PERC	ENT 715	CAS NO.	OSHA-PEL/ACGIH-TLV
Copper Nickel Iron Managnese	86.5 min 9.0-11.0 1.0-1.75 .75 max	65.0 min 29.0-32.0 1.0 max 25-1.0	7440-50-8 7440-02-0 (OXIDE) 1309-37-1 7439-96-5	Exposure Levels See Section V

HAZARDOUS MIXTURES OF OTHERS LIQUIDS, SOLIDS, OR GASES:

If exposure to copper and nickel dust/fume is kept below Permissible Exposure Limits

(PEL)/Threshold Limit Value (TLV) iron and Manganese along with other trace

impurities should not pose any health risk.

SECTION 111 - PHYSICAL DATA				
MELTING	Alloy 706/ 2010° F	Alloy 715/ 2140° F		
Vapor Pressure (mm Hg.)	Not Applicable	Not Applicable		
Solubility in Water	negligible	negligible		
Specific Gravity (H ² O * 1)	8.94	8.94		

SECTION	1 V –	FIRE	AND	EXPLOS	ION .	HAZARD I	DATA
					~		

Flash Point (Method Used)

Not applicable *

Extinguishing Media

Not Applicable

0908-2154

Special Fire Fighting Procedures

Not applicable

TRW-00788

Unusual Fire and Explosion Hazards

Not applicable

22011 00100

Under normal conditions. Heavy concentrations of fine copper dust may cause flash fire if exposed to ignition source.



HEALTH PRECIAL HAZARD RATING

MATERIAL SAFETY DATA

EMERGENCY PHONE (203) 356-2345

Olin Corporation, 120 Long Ridge Road	46641614
Stamford Connections 06004	SECTION I - IDENTIFICATION

COPPER NICKEL 15%	•		
COPPER COPPER	FORMULA	ALLOY 709	
DESCRIPTION Metal		CAS NO.	

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive operations and melting only. Do not get in eyes, on skin or on clothing. Do not take internally. Avoid breathing dust or fumes.

COMMONIVE	ACTION	ON MATERIALS (Metale,	Stands Sub	A
COULCELLE	~ 1107	ALL MAIR LUINES IMPOSE	PROGRAMME	

Dust and Fume - Goggles None necessary	Dust or fume - Local exhaust or genera
	ventilation required as dictated
Other None necessary	by airborne concentrations.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROX.	OSHA PEL	LD 50	LC 80	SIGNIFICANT EFFECTS
Copper		Dust 1 mg Fume 0.1	m ³ ng/m ³		Dust and fume - chills, gastro-intestinal distress
Nickel		Dust 1 mg			Dust or metal - dermatitis
		· · · · · · -			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

PLASH POINT METHOD	Not Applicable	OSHA CLASSIFICATION Not Applicable	FLAMMABLE EXPLOSIVE LIMITS	LOWER	UPPER		
Extinguishing media Not Applicable							
PECIAL FIRE HAZARO & FIRE FIGHTING PROCEDURES USE NIUSH/MSHA approved self-contained breathing apparatus where this material is involved in a fire.							

THRESHOLD LI	MIT VALUE None established.
SYMPTOMS OF	over exposure Dust or Fume: Sneezing, congestion, metallic taste, nausea, chills, dermatitis
SKIN	Dust or fume: EMERGENCY FIRST-AID PROCEDURES Flush thoroughly with water.
4YE8	Dust or lume: Flush with water for 15 minutes, call a physician.
INGESTION	Dust or fume: Drink water, induce vomiting by sticking finger down throat, call a physician.
INHALATION	Dust or fume: Remove victim to fresh air, call a physician.
	TPW_00780

SECTION VI - TOXICOLOGY (Product)

ACUTE GRAL Lowest Published Lethal

Dose - (Copper) 120 mg/kg (human)

CARCINOGENIC Dust may cause respiratory tract cancer

MUTAGENIC

No available data No available data Not known to be mutagenic every servation Dust and fume - irritant Dust is irritant

MOSTATIRRI MINE YRAN

AGUTE INHALATION LE SE

CUTTE DERMAL LD 80

CIPAL ROUTES OF ASSORPTION

Inhalation, ingestion of metal, dust or fume

EFFECTS OF ACUTE EXPOSURE

Dust or fume: Congestion, gastro-intestinal distress, chills, dermatitis

EPPRETS OF CHRONIC EXPOSURE

Dust and fume: May cause kidney, liver or spleen damage, anemia

SECTION VII - SPILL OR LEAKAGE PROCEDURES (Control Procedures)

ITEPS TO SE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Dust or fume - Wear NIOSH/MSHA approved dust and fume respirator. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134). Shovel or sweep up and place in an approved DOT container and seal. Wash all contaminated clothing before reuse.

In the event of a large spill use the emergency telephone number shown on the front of this sheet.

HASTE DISPOSAL METHOD

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - REACTIVITY DATA

BUCCRASAH MAY OCCUR STACK S X UNSTABLE **POLYMERIZATION** WILL NOT OCCUR X Presence of carbon monoxide during melting CONDITIONS TO AVOID Dust and fume - acetylene, chloride MANAGERITY DA

Copper fume, nickel carbonyl ZARBOUS DECOMPOSITION PRODUCTS

MELTING POINT	VAPOR PRESURE	VOLATILES
SOILUIG FORKT	SOLUBILITY IN WATER	EVAPORATION RATE
SPECIFIC GRAVITY(H20 T)	pM .	VAPOR DENSITY(Ab = 1)
	- 1	

SECTION IX - PHYSICAL DATA

INFORMATION FURNISHED BY:

Gaudreau (203) 789-5434

DATE October 19, 1984

Department of Environmental Hygiene and Toxicology

II CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904

OCEANSM Network **EMERGENCY PHONE (203) 356-2345** 0908-2156



EMERGENCY PHONE 1-800-OLIN-911

SECTION 1 - IDENTIFICATION .

CHEMICAL NAME & SYNONYMS			
Copper Nickel 20%			
CHEMICAL FAMILY	FORMULA		TRADE NAME
Copperi		Mixture	ALLOY 710
DESCRIPTION			CAS NO.
Metal			Not assigned/mixture

SECTION 11 - NORMAL HANDLING PROCEDURES

PRECAUTIO	DNS TO BE TAKEN IN HANDLING AND STORAGE	
	Precautions needed for abrasive, melting or other operations generating a dust of	r fume.
٠٤.	Do not get dust or fume in eyes, on skin or on clothing. Do not take internally	. Wash

thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below the TLV for copper, zinc and nickel.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL		OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
 Copper	Dust Fume	1 mg/m ³ 0.1 mg/m ³	$ ext{TD}_{ ext{LO}}$ 120 ug/kg	No data	Metal fume fever, respiratory irritation
Zine	Fume	5 mg/m ³	No data	TCLO 124 mg/m	Metal fume fever
Nickel	Dust	1 mg/m ³	No data	50 min.(hu No data	n.) Dermatitis, suspect

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE	LOWER	UPPER					
METHOD Not Applicable	N/A	N/A						
EXTINGUISHING MEDIA Use extinguishing media suitable for surrounding materials.								
	SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES Use NIOSH/MSHA approved positive pressur self-contained breathing apparatus when any material is involved in a fire.							

THRESHOLD LIN	None established for mixture (copper fume 0.2 r 5 mg/m ³ , nickel 1 mg/m ³ ACGIH 1985-86).	ng/m ³ , zinc fume
SYMPTOMS OF	DVER EXPOSURE	
Dust an	d fume - sneezing, congestion, metallic taste, nausea, chills, fever, d	ermatitis.
Dus	t or fume: Wash with EMERGENCY FIRST-AID PROCEDURES	
SKIN SOR	and water before eating or smoking. If an irritation develops, call a	physician.
EYES	Dust or fume: Flush thoroughly with water for 15 minutes. Call a	physician.
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.	•
INHALATION	Dust or Fume: Remove victim to fresh air. Call a physician.	RW-00791

FLAMMABILITY

0
REACTIVITY
HAZARO RATING

MATERIAL SAFETY DATA

Chemical_

EMERGENCY PHONE (203) 356-2345 Olin Corporation, 120 Long Ridge Road

Stamford, Connecticut 06904

SECTION I - IDENTIFICATION

Chemical name a synonyms Copper Nicket 25%					
COPPER	FORMULA	TRADE NAME ALLOY 713			
DESCRIPTION Metal		CAS NO.			

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive operations and melting only. Do not get in eyes, on skin or on clothing. Do not take internally. Avoid breathing dust or fumes.

PROTECT	IVE EQUIPMENT	VENTILATION REQUIREMENTS
Eyes Glaves	Dust and Fume - Goggles None necessary	Dust or fume - Local exhaust or general ventilation required as dictated
Other	None necessary	by airborne concentrations.

SECTION III – HAZARDOUS INGREDIENTS

SASIC MATERIAL	APPROX.	osha Pel	LO 50	LC 50	SIGNIFICANT EFFECTS
Copper		Dust 1 mg Fume 0.1	/m ³ mg/m ³		Dust and fume - chills, gastro-intestinal distress
Nickel		Dust 1 mg			Dust or metal - dermatitis

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	Not OSHA CLASSIFICATION			FLAMMABLE	LOWER	UPPER
METHOD	Apolicable	EXPLOSIVE				
EXTINGUISHIN	IG MEDIA					
Not	Applicable				•	
SPECIAL FIRE	HAZARO & FIRE FI	ghting procedures	Use NIOSH/M	ISHA approved self	-containe	d
breat	thing apparatus	where this materia	·			

THRESHOLD LI	MIT VALUE
	None established.
SYMPTOMS OF	Dust or Fume: Sneezing, congestion, metallic taste, nausea, chills, dermatitis
	Dust or fume: EMERGENCY FIRST-AID PROCEDURES
SKIN	Flush thoroughly with water.
EYES	Dust or fume: Flush with water for 15 minutes, call a physician.
INGESTION	Dust or fume: Drink water, induce vomiting by sticking finger down throat, call a physician.
INHALATION	Dust or fume: Remove victim to fresh air, call a physician.

CHEMICAL NAME ALLOY 713

SECTION VI — TOXICOLOGY (Product)

ACUTE ORAL Lowest Published Lethal

Dose - (Copper) 120 mg/kg (human)

Dust may cause respiratory CARCINOGENIC

tract cancer MUTAGENIC

ACUTE DERMAL LD 80

No available data No available data

Not known to be mutagenic EVE IMPRITATION Dust and fume - irritant
Dust is irritant

PRIMARY SKIN IRRITATION

ACUTE INHALATION LC ED

PRINCIPAL ROUTES OF ASSORPTION

Inhalation, ingestion of metal, dust or fume

EFFECTS OF ACUTE EXPOSURE

Dust or fume: Congestion, gastro-intestinal distress, chills, dermatitis

EPPECTS OF CHACKIC EXPOSURE

Dust and fume: May cause kidney, liver or spleen damage, anemia

SECTION VII - SPILL OR LEAKAGE PROCEDURES (Control Procedures)

STEPS TO SE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Follow OSHA Dust or fume - Wear NIOSH/MSHA approved dust and fume respirator. regulations for respirator use. (See 29 CFR 1910.134). Shovel or sweep up and place in an approved DOT container and seal. Wash all contaminated clothing before reuse.

In the event of a large spill use the emergency telephone number shown on the front of this sheet.

NASTE DISPOSAL METHOS

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - REACTIVITY DATA

STAGLE XUMETABLE HAZAROOUS MAY OCCUR POLYMERIZATION WILL NOT OCCUR Presence of carbon monoxide during melting CONDITIONS TO AVOID Dust and fume - acetylene, chloride DICCOMPATABLLITY IN

Copper fume, nickel carbonyl ZARGOUS DECOMPOSITION PRODUCTS

MELTING POINT 2188	VAPOR PRESSURE	VOLATILES
SOILING POINT	SOLUGILITY IN WATER	SYAPORATION RATE
SPECIFIC GRAVITY(H20 41)	a44	VAPOR DENSITY(AIr = 1)
DENSITY .323 lbs/m ³		

SECTION IX - PHYSICAL DATA

INFORMATION FURNISHED BY:

024 A. L. Gaudreau (203) 789-5434

DATE

October 19, 1984

Department of Environmental Hygiene and Toxicology

III CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904

OCEANSM Network **EMERGENCY PHONE (203) 356-2345** 0908-2159

TRW-00793

U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

							
		SECT	ION I				
MANUFACTURER'S NAME				NCY TELEPHONE	NO.		
THE COSMIN CORPORATION 512/828-9261							
ADDRESS (Number, Street, City, State, and ZIP Co. 1635 N.E. Loop 410. Ste. #910.	de) Si	an Anto	nio. Texas / 78209				
1635 N.E. Loop 410. Ste. #910. CHEMICAL NAME AND SYNONYMS Ferrous Sulfate Heptahydrate or	Tw	on (11)	TRADE NAME AND S Sulfate Copperas	YNONYMS			
CHEMICAL FAMILY	_ <u></u>	011 (11)	FORMULA				
Inorganic Salt			FeSO, 7H ₂ O	 			
SECTION	11 -	HAZAF	RDOUS INGREDIENTS				
PAINTS, PRESERVATIVES, & SOLVENTS	×	TLV (Units)	ALLOYS AND METALLIC	COATINGS	×	TLV (Units)	
PIGMENTS			BASE METAL				
CATALYST			ALLOYS				
VEHICLE			METALLIC COATINGS				
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX	Κ	_		
ADDITIVES			OTHERS]
THERS Ferrous Sulfate is by the U.S. Depart	not	lister of Tr	d as hazardous				
1			OUIDS, SOLIDS, OR GASES		×	TLV (Units)	
Ferrous Sulfate CAS#7	782	-63-0		(ACGIH)	\$4.6	1 mg F	e/m 3
TSCA	Reg	istry #	N085100	EPA: 40 CFR	116	.4 Haz	Su
Contains small amounts of free	sul	furic a	cid	(ACGIH)	1	1 mg/	3
CAS#7	664	-93-9	•				
050	TIO	A. 431 - F	NIVOLOAL DATA				7
Decomposes at 300°C			PHYSICAL DATA		_		ł
BOILING POINT (°F.) On heating looses dration, changing to 4H2O, then	12	90				.189	1
VAPOR PRESSURE (mm Hs.) @ 250C	14	-	PERCENT, VOLATILE BY VOLUME (%) Can cont	ain Ideal	de 1	0 noistur	<u>.</u>
VAPOR DENSITY (AIR-1) Tel. water va	P 0	.019	Butyl Acetate=1) much			1	
SOLUBILITY IN WATER Z FeSO4.7H20						3]
APPEARANCE AND ODOR Grey-Green Cr	yst	als, sl	ight acidic odor or o	dorless]
SECTION IV -	FIR	FAND	EXPLOSION HAZARD DA	TΔ		·····	1
FLASH POINT (Method used)			FLAMMABLE LIMITS	Lei		Uel	1
not combusti			NA NA				1
no fire haza SPECIAL FIRE FIGHTING PROCEDURES	rd						1
	non	e					-
UNUSUAL FIRE AND EXPLOSION HAZARDS							1.
	non	<u> </u>		1	RV	V-0079)4
							-

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE for iron salts, as Fe = lmg/cu.m. ACGIN (1975)

(16CFR 1500.4 and 16CFR 1500.3 6 (8) & (9); eyes: severe irritant (16CFR 1500.4)

EMERGENCY AND FIRST AID PROCEDURES

Nose, eye & skin contact: flush with copious water.

Ingestion: moderately toxic, lethal dose 5 to 113 gms (Gosselin, III p.153), give milk immediately, induce vomiting & call physician immediately.

	•		SECTIO	ON VI - RE	ACTIVITY DATA			
STABILITY	UNS	TABLE		CONDITION	s TO AVOID susceptible only to non-hazardous (taking months)			
	STA	BLE	X	dation				
	incompatability (Materials to avoid) moisture causes non-hazardous caking							
HAZARDOUS D	ECOMPOS	TION PRODU	SO ₂	if FeSO	4 heated above 300°C			
HAZARDOUS		MAY OCCU			CONDITIONS TO AVOID			
POLYMERIZATI	ON							

	SECTION VII - SPILL ON ELAKT MODEDONES	
	E TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	_
Tf dry:	scoop or shovel for removal	
⊥f wet:	wash to waste water drain leading to neutralization treatment and	

COLL OD LEAK DEOCEDHDEC

of wet: wash to waste water drain leading to neutralization treatment and iron-solid removal.

WASTE DISPOSAL METHOD
If dry: add to other material for sanitary landfill.

CECTION VIII

If wet: wash to waste water drain & neutralize with lime & treat for iron removal. Dispose of dewatered solids in landfill.

	SECTION VIII - SPECIAL PROTECTION INFORMATION							
RESPIRATORY PR dust, use si	OTECTION (Specify type) Normally resuggle filter nose & mouth resp	piratory prot	ection not req	uired. In event				
VENTILATION	LOCAL EXHAUST		SPECIAL	or equivalent)				
•	MECHANICAL (General) as necessary to reduce dust							
PROTECTIVE GLO		EYE PROTECTION						
OTHER PROTECTI	VE EQUIPMENT none required							

SECTION IX - SPECIAL PRECAUTIONS						
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Avoid skin & eye contact - avoid dust in- halation. Ferrous sulfate is not dangerous and can be handled in bags or in bulk						
if the same moderate care is taken as with any non-toxic inorganic salt.						
OTHER PRECAUTIONS						

PAGE (2)

Form OSHA-20 Rev. May 72

THE COSMIN CORPORATION

THE CROSSROADS - 1635 N.E. LOOP 410 SAN ANTONIO, TEXAS 78209

512-828-9261

OUT-OF-STATE WATS 800-531-5534

	REPRESENTAT	IVE FERROUS SUL	.FATE HEPTAHYDRATE	E ANALYSIS C	Ben.
ı.	FeSO ₄ . 7H ₂ O		e Heptahydrate		98.5%
	Composed of: Fe (11)	Iron (ous)		20.0 - 21.5%	
	S	Sulphur	11.5%		
	0 so ₄	Oxygen Sulfat e	$\frac{22.9\%}{34.4\%}$	34.4%	
	FeSO ₄	Ferrous Sulfat Anhydrous	e	54.4%	
	H ₂ O	Water (hydrate	:)	44.0%	
II.	Other Constit	uents:			1.5%
	MgSO4 - TiO2 - MnO - H2SO4 - Fe ₂ O ₃ -	0	.de	0.6% 0.2% 0.1% 0.5% 0.1% 0.000%	
III.	Analysis for	Trace Metallic	Elements:		
	As Pb Cd Hg Cr Ba Se Ag Sb Zn Cu Ca	Arsenic Lead Cadmium Mercury Chromium Barium Selenium Silver Antimony Zinc Copper Calcium	.0000% .0007% .0000% .0000% .0000% .0000% .0000% .0000% .0000% .0000%	`	

IV. Anti-caking Additive:

At the customer's request anti-caking agent may be added up to 1%, increasing the following constituents depending upon the amount added.

Analysis of standard additive:

CaCO3	Calcium Carbonate	96. %	0908-2162
MgCO3	Magnesium Carbonate	3.5%	

EMERGENCY PHONE 1-800-OLIN-911

Cupro Nickel 30%		
CHEMICAL FAMILY Copper	FORMULA Mixture	TRADE NAME Alloy 715
DESCRIPTION Metal		Not assigned/mixture

SECTION I - IDENTIFICATION

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS		
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	As required to keep airborne concentrations below the TLV for copper and nickel.		

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	· · · · ·	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust Fume	0.1 mg/m ³	TD _{LO} = 120 ug/kg (human)	No data	Dust and fume-metal fume fever, respiratory irritation
Nickel	Dust		LD _{LO} = 5 mg/kg (guinea pig)	No data	Dust or metal-dermatitis suspect carcinogen

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT		Not Applicable Non-combustible solid			LOWER	UPPER N/A
METHOD	Not Applicable				N/A	
EXTINGUISHIN	G MEDIA					
Use	e extinguishing me	edia suitable for	surrounding materia	ls.		
SPECIAL FIRE	IAZARD & FIRE FIGHTI!	IG PROCEDURES	Use NIOSH/MSH	A approved pos	itive pre	ssure
sel	f-contained breat	hing apparatus w	here any material is	involved in a fi	re.	

THRESHOL	D LIMIT VALUE None established for mixture (Copper fume - 0.2 mg/m ³ , Nickel -
	1 mg/m ³ ACGIH 1984).
	OF OVER EXPOSURE Dust or Fume: Sneezing, congestion, metallic taste, nausea, chills, dermatitis
SKIN	Dust or fume: Wash with EMERGENCY FIRST-AID PROCEDURES soap and water before eating or smoking. If an irritation develops, call a physician.
EYES	Dust or fume: Flush with water for 15 minutes, call a physician.
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.
INHALATIO	Dust or Fume: Remove victim to fresh air, call a physician. TRW-00797

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50	No data for alloy	CARCINOGENICITY MUTAGENICITY	Nickel is considered a carcinogen by NTP
ACUTE DERMAL LD 50	No data for alloy	EYE IRRITATION	Not known to be mutagenic Dust and fume - irritant Dust may be an irritant
ACUTE INHALATION LC 50	No data for alloy	PRIMARY SKIN IRRITA	ATION DUST INLY DE AIT ITITALIT
	exposure to metal dus	t or fume	
effects of acute exposure and mucous members.		Metal fume feve	er, respiratory irritation, skin, eye
effects of chronic exposers. Nickel has	SURE Dermatitis. (as been associated with	Chronic over-expo	sure may cause kidney and liver

SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

ACTION FOR MATERIAL RELEASE OR SPILL

Dust or fume - Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill use the emergency telephone number shown on the front of this sheet.

TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

WASTE DISPOSAL METHOD

Dispose of contaminated product, empty containers and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - SHIPPING DATA

D.O.T. CLASS Not regulated

SECTION IX - REACTIVITY DATA

STABLE	X UNSTABLE	AT	°c			MAY OCCUR
					POLYMERIZATION	WILL NOT OCCUR X
CONDITION	IS TO AVOID	Presenc	e of car	bixonom nod	le during melting	
1						
INCOMPATI	BILITY (Material to	Avoid) I	oust and	fume - acet	ylene, chloride	
1			_	_		
HAZARDOU	S DECOMPOSITION	PRODUCTS	<u> </u>	Copper fume	, nickel carbonyl	

SECTION X - PHYSICAL DATA

MELTING POINT	2140°F	VAPOR PRESSURE	N/A	VOLATILES	N/A
BOILING POINT	No data	SOLUBILITY IN WATER	Insoluble	EVAPORATION RATE	N/A
SPECIFIC GRAVITY (H	20 - 1) *	pH N/A		VAPOR DENSITY (Air = 1)	N/A
* DENSITY	.323 lbs/in ³				

INFORMATION FURNISHED BY:

Environmental Hygiene and Toxicology

(203) 789-5436

DATE March 31, 1986

TRW-00798

Department of Environmental Hygiene and Toxicology (203) 789-5436

Olin CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904

OCEAN® Network

EMERGENCY PHONE 1-800-OLIN-911

SECTION I - IDENTIFICATION

Copper, oxygen free		
COPPER:	FORMULA Mixture	TRADE NAME Alloy 102
Red orange metallic sol	id / ;	CAS NO. Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume.

Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS
Eyes Gloves Other	Goggles Impervious NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occurs	As required to keep airborne concentrations of copper below TLV.

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL		OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	•	Dust 1 mg/m ³	TD _{LO} 120 ug/kg (human)	No data	Inhalation - metal fume fever, respiratory tract irritation

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT		OSHA CLASSIFICATION	FLAMMABLE	LOWER	UPPER		
METHOD	Not applicable	Non-combustible solid	EXPLOSIVE LIMITS	N/A	N/A		
EXTINGUIS	EXTINGUISHING MEDIA						
	Use extinguishing	media suitable for surrounding materials	• .				
	SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES USE NIOSH/MSHA approved positive pressure						
I	self-contained brea	athing apparatus when any material is in	volved in a fir	e.			

THRESHOLD LIM	Copper; dust - 1 mg/m ³ , fume 0.2 mg/m ³ (ACGIH 1985-86)	
SYMPTOMS OF C	Dust and fume: Sneezing, congestion, metallic taste, nausea, chill	s, fever.
Dus Soap	or fume: Wash with Emergency First-Aid Procedures and water before eating or smoking. If an irritation develops, call a	
EYES	Dust or fume: Flush thoroughly with water for 15 minutes. Call a	physician.
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician	•
INHALATION	Dust or Fume: Remove victim to fresh ein. Call a physician.	TRW-00799

MATERIAL SAFETY DATA SHEET

Answed Referred to

50 Terminal Tower: Cleveland: Ohio 44113, 216/621-6425

Emergency Phone No. 216/441-4900 Product Name: Tru-Plate Powdered Copper Chemical 1327 Plant Address: Chemtrac Phone No. Cleveland, OH 44109 2910 Harvard Avenue 800/424-9300 Issue Data 10/85 Revised Date. Prepared By: TSCA Coordinator

INGREDIENTS AND HAZARDOUS COMPONENTS

		%	TLV	C.A 8.#	Suspecti Caronogen
Copper Sulfate	<	40	1.0		
į.			MG/3		
·					
:	- ,				
ţ.					
•					
			Copper Sulfate 40	Copper Sulfate (40 1.0 MG/3 M	Copper Sulfate (40 1.0 98-7

PHYSICAL DATA

pH: 1% solution Specific Gravity: 2. Keep copy of this MSDS impovers UK Vapor Pressure at 20° C: Vapor Density (Air = 1): % Volatiles by Volume: Odor: NA NA NA none Evaporation Rate (Butyl Acetate = 1) Solubility in Water: soluble NA

Appearance and Form:

Light blue - to light green, dry mixture.

FIRE AND EXPLOSION HAZARD DATA

Flash Point:	NA	Flammable Limits in	1 Airi	
			Upper:	NA
Test Method:	NA	% By Volume	Lower:	
Extinguishing Medi	á:			
As nec	essary for primary cause of	fire.		
Special Fire Fightin	g Procedures:			
None	1			
Unusual Fire and E None				TRW-00800
DOT Classification:	RQ Cupric Sulfate Mixture ORM-E NA 9188	Note: UK = U	nknown N	A = Not Applicable

Powdered Copper Chemical 1327

	HEALTH H	AZARD DATA	C50-0246
Effects of Overex	posure and Primary Entries to Body:		
May car	se skin irritation.		
		•	
Emergency and F	irst Aid Procedures:		
	ffected area thoroughly wi	th clean wate:	r. For eyes, get
medical	attention, if irritation	is persistant	•
	REACTI	VITY DATA	
Stable [Unstable Conditions to Avoid:		
Incompatability -	Materials to Avoid:		
None			
			· ·
	nposition Products: ace oxides of sulfur at ver	v high temper	s+urac
Hazardous Polym		A made cember	a cut es.
		☐ May Occur ★26	Will Not Occur
	SPILL OR LEA	K PROCEDURES	,
Spills:		•	
Sweep up	and transfer to waste trea	tment system.	
Waste Disposal &	Methods: :o all federal, state and l	ocal regulation	one for discosal of
	ontaining wastes.	ocal regulation	ons for disposal of
JOFF J		•'	
	SPECIAL PROTEC	TION INFORMATION	<u> </u>
Respirator: Approv	ed dust respirator.		
Ventilation: Mechanica	1 - Sufficient to stay bel	ow TLV.	
Gloves Plastic-	Eye and Face:	Other: Protes	ctive clothing to avoid
Plastic-	Goggles		contact.
Handling and Sto			3-11-1-11-11-11-11-11-11-11-11-11-11-11-
	container from physical dam closed when not in use.	age. Store in	a dry area; keep
CONCATUEL	Closed when not in deg.		

THIS PRODUCT SAFETY DATA SHEET IS OFFERED SOLELY FOR YOUR INFORMATION CONSIDERATION AND INVESTIGATION.

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DATE: 3/26/85

REV. DATE: 4/21/86

REVISION NO.: 1

MATERIAL SAFETY DATA SHEET

SECTION 1

MANUFACTURER'S NAME:

HUSSEY COPPER LTD.

ADDRESS:

Washington Street LEETSDALE, PA. 15056

EMERGENCY PHONE NO.:

412-857-4200

CHEMICAL NAME AND SYNONYMS:

COPPER

TRADE NAME AND SYNONYMS:

SUPER SILVER COPPER CDA ALLOY 155

CHEMICAL FAMILY:

COPPER

	SECTION 11 - HAZA	RDOUS INGREDIENTS	
INGREDIENT	PERCENT	CAS NO.	OSHA-PEL/ACGIH-TLV
Base Metal Copper	99.75* MIN	7440-50-8	Exposure Levels See Section V

HAZARDOUS MIXTURES OF OTHERS LIQUIDS, SOLIDS, OR GASES:

If exposure to copper dust/fume is kept below Permissible Exposure Limits (PEL)/ Threshold Limit Value (TLV) all trace elements should not pose any health risk.

^{*} Copper plus silver - 155 copper is expected to contain less than .1% silver.

CCCTION		0111/0101	
SELTION	111 -	- PHYSICA	L DAIA

MELTING

1972° F

Vapor Pressure (mm Hg.)

Not applicable

Solubility in Water

negligible

Specific Gravity (H² O * 1)

8.9

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used)

Not applicable

Extinguishing Media

Not Applicable

Special Fire Fighting Procedures

Not applicable

TRW-00802

Unusual Fire and Explosion Hazards

Not applicable

* Under normal conditions. Heavy concentrations of fine copper dust may cause flash fir



DATE: 3/26/85

REV. DATE: 4/21/86

REVISION NO.: 2

MATERIAL SAFETY DATA SHEET

SECTION 1

MANUFACTURER'S NAME:

HUSSEY COPPER LTD.

ADDRESS:

Washington Street LEETSDALE, PA. 15056

EMERGENCY PHONE NO.:

412-857-4200

CHEMICAL NAME AND SYNONYMS:

COPPER/ZINC

TRADE NAME AND SYNONYMS:

Gilding, commercial bronze, red brass, low brass, cartridge brass, yellow brass. CDA Alloy 210, 220,

226, 230, 240, 260, 268

CHEMICAL FAMILY:

COPPER AND ZINC

	SECTION 11 - HAZ	ZARDOUS INGREDIENTS	
INGREDIENT	PERCENT	CAS NO.	OSHA-PEL/ACGIH-TLV
_	96.0 to 65.0	7440-50-8	<u> </u>
Copper Zinc	4.0 to 35.0	7440-66-6	Exposure Levels See Section V

HAZARDOUS MIXTURES OF OTHERS LIQUIDS, SOLIDS, OR GASES:

If exposure to copper and zinc dust/fume are kept below Permissible Exposure Limits (PEL)/Threshold Limit Value (TLV) all trace elements should not pose any health risk.

		SECTIO	ווו אכ	- PHY	SICAL	DATA	
ALLOY MELTING Vapor Pressure (mm Hg.)		220 1870 pplicat	1840	230 1810	240 1770	260 1680	, 268 1660
Solubility in Water	negli	gible					
Specific Gravity (H ² O = 1)	8.86	8.80	8.78	8.75	8.67	8.53	8.47

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used)

Not applicable

Extinguishing Media

Not Applicable

0908-2169

Special Fire Fighting Procedures

Not applicable

TRW-00803

Unusual Fire and Explosion Hazards

Not applicable

K Under normal conditions. Heavy concentrations of fine copper dust may cause flash fire if exposed to ignition source.

SECTION I - IDENTIFICATION

COPONZE A SYNONYMS COPONZE ALUMINUM	Bronze	
CHEMICAL FAMILY	FORMULA	TRADE NAME
Copper	Mixture	Alloy 638
DESCRIPTION		CAS NO.
Red orange metallic	solid	Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash hands with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS		
Eyes Gloves	Dust - goggles Impervious (if necessary)	As required to keep airborne concentrations of copper and aluminum		
Other	NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occurs	below TLV.		

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL		osha Pel	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust Fume	1 mg/m ³ 0.1 mg/m ³	TD _{LO} 120 ug/kg (human)	No data	Inhalation - metal fume fever, respiratory tract irritation
Aluminum		None Established	No data	No data	Over-exposure may cause lung fibrosis (Shaver's Disease)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT		OSHA CLASSIFICATION		FLAMMABLE	LOWER	UPPER
METHOD	Not Applicable	Non-comb	ustible solid	EXPLOSIVE LIMITS	N/A	N/A
EXTINGUISHIN		edia suitable for sur	rounding material.			
	HAZARD & FIRE FIGHTIN		Use NIOSH/MSH		sitive pres	SIIPA
sel	f-contained breat	hing apparatus when				

THRESHOLD LIM	Copper dust 1 mg/m ³ , fume 0.2 mg/m ³ , Aluminum 10 mg/m ³ (ACGIH 1985-86)
SYMPTOMS OF	Dust and fume - sneezing, congestion, metallic taste, nausea, chills, fever
	fume: Wash with EMERGENCY FIRST-AID PROCEDURES o and water before eating or smoking. If an irritation develops, call a physician.
EYES	Dust or fume: Flush with water for 15 minutes, call a physician.
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.
INHALATION	Dust or fume: Remove victim to fresh air, call a physician. TRW-0080

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50 Not known to be carcinogenic CARCINOGENICITY Copper 120 ug/kg ACUTE ORAL TDLO Not known to be mutagenic (human) MUTAGENICITY **ACUTE DERMAL LD 50** No data for alloy EYE IRRITATION Dust is irritating PRIMARY SKIN IRRITATION Dust may be irritating ACUTE INHALATION LC 50 No data for alloy PRINCIPAL ROUTES OF ABSORPTION Inhalation of dust or fume EFFECTS OF ACUTE EXPOSURE Dust or fume: Skin, eye and mucous membrane irritation, metal fume fever, respiratory tract irritation. None expected at industrial use levels. Chronic overexposure may EFFECTS OF CHRONIC EXPOSURE cause liver and kidney effects.

SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

ACTION FOR MATERIAL RELEASE OR SPILL

Dust or Fume: Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill, use the emergency telephone number shown on the front of this sheet.

TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

WASTE DISPOSAL METHOD

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - SHIPPING DATA

D.O.T. CLASS

Not regulated

			SECTION	DN IX - REA	CTIVITY DATA	
STABLE	X UNSTABLE AT	-°c	o _k	HAZARDOUS	MAY OCCUR	
					POLYMERIZATION	WILL NOT OCCUR X
CONDITION	S TO AVOID	Presence	e of cart	on monoxi	de during melting	
INCOMPAT	BILITY (Material to /	(blov/	dust and	lume – acet	ylene, chlorine	
HAZARDOU	S DECOMPOSITION	PRODUCT	8 ^	nnner fume	aluminum oxide	

SECTION X - PHYSICAL DATA

MELTING POINT 18300F	VAPOR PRESSURE	N.A.	VOLATILES	N.A.
BOILING POINT NO data	SOLUBILITY IN WATER	Insoluble	EVAPORATION RATE	N.A.
SPECIFIC GRAVITY (H,O = 1)	рН	N.A.	VAPOR DENSITY (Air = 1)	N.A.
*DENSITY .299 lbs/in ³				

INFORMATION FURNISHED BY:

Environmental Hygiene

and Toxicology (203) 789-5436 DATE March 21, 1986

TRW-00805

Department of Environmental Hygiene and Toxicology (203) 789-5436

CORPORATION
120 Long Ridge Road, Stamford, Connecticut 06904

OCEAN® Network



JUN - 3 1992

23000 ST. CLAIR AVE. • CLEVELAND, OHIO 44117 • 800-627-6422 EMERGENCY 24 HOUR CHEMTREC NO. 800-424-9300

MATERIAL SAFETY DATA SHEET

5292

		Sect10	ו חכ	<u> </u>	
Identity CORROSOL 52921		NFPA CODE:	05/03/92 Flattability: 0		5/ 9 6/91
4	Section II -	Hazardous	. Ingredie	nts	
Hazardous Ingredients	9	ARA 313 CAS	# OSHA - PEL	ACGIH TLY	Other Hez
SODIUM HYDROXIDE (CAUSTIC SODA LIQUID)		65 % (31 0- 73-7		2 MG/CUM (C) G/CUM/15M (C)	CORROSIVE
NO COMPONENT WAS FOUND TO				**************************************	
	n III – Physi				. C . 5
Boiling Point	NOT DETERMINED		ific Gravity (H20=)		< 2. 1
Vapor Pressure (am Hg)	NOT DETERMINED		ent Volatile Volume (%)	55	
Vapor Density (AIR=Reference	(e) Not determin ed		oration Rate (ETHER=Reference)	OWER
Water Soluble	YES				
Appearance and Odor LIGHT 87	FRAW-COLORED LIQ	OID			
Section	on IV - Fire	and Explo	sion Haza	rd Dat:	
Flash Point (Method Used) NOT FLAMMABLE			able Livits APPLICABLE	Œ.	VEL.
Extinguishing Media CARE	ON DIGXIDE, DRY	CHEMICAL. F	FOAM. ALCOH	HOL FOAM	
Special Fire Fighting Proce APPARATUS WITH FU				WHILE FI	: FING FIR
Unusual Fire and Explosion	Hazards NONE KNOWN	₹.			
	Section \	V - Reacti	ivity Data	1	· •
STABILITY Unstable Stable	Conditions to Avoid * NONE KNOWN				
INCORPATIBILITY (Materials STRONG ACIDS	to Avoid)			TRU	V-00 8 06



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MATERIAL SAFETY DATA SHEET

CORROSOL 52921

5292

Section V - Reactivity Data Cont.	
Hazardous Decomposition Products NONE KNOWN	
HAZARDOUS May Occur Conditions to Avoid POLYMERIZATION Will Not Occur * NONE	
Section VI - Health Hazard Data	
Primary Routes of Entry: Inhalation? * Skin? * Ingestion?	
Effects of Overexposure MAY CAUSE MINOR TO MAJOR BURNS DEPENDING UPON DURATION OF EXPOSURE TO SKIN. MAY CAUSE SEVERE EYE IRRITATION INHALATION OF MIST MAY CAUSE DAMAGE TO NASAL AND RESPIRATORY PAINGESTION MAY RESULT IN SEVERE DAMAGE TO MUCOUS MEMBRANES AND DEPENDING TO MUCOUS MEMBRANES AND DEPENDING TO MUCOUS MEMBRANES AND DEPENDING TO MUCOUS MEMBRANES AND DEPENDING TO MUCOUS MEMBRANES AND DEPENDING TO MUCOUS MEMBRANES AND DEPENDING TO MUCOUS MEMBRANES AND DEPENDING TO MUCOUS MEMBRANES AND DEPENDING TO MAJOR BURNS DEPENDING UPON TO MAJOR BU	GES.
Medical Conditions Aggravated by Overexposure NONE FOUND	
Emergency and First Aid Procedures:	
Eye (Contact): FLUSH EYES WITH COPIOUS AMOUNTS OF WATER FOR 15 MINUT AND CONTACT PHYSICIAN IMMEDIATELY.	
Skin (Contact): FLUSH WITH WATER FOR 15 MINUTES. CONTACT PHYSICIAN IRRITATION PERSISTS.	
Ingestion (Ingestion): DRINK LARGE QUANTITIES OF MILK OR WATER. CONSUL PHYSICIAN IMMEDIATELY.	
Inhalation (Breathing): REMOVE. TO FRESH AIR.	
Section VII - Precautions for Safe Handling	Use
Steps to be taken in Case Material is Released or Spilled CONTAIN SPILL AND RECOVER CLEAN HATERIAL. NEUTRALIZE WITH DI	TE ACID.
Waste Disposal Nethod: DISPOSE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.	
Precautions to be Taken for Handling and Storage STORE ABOVE FREEZING. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. STORE IN COOL, CLOCATION. STOCK SHOULD BE ROTATED.	an, DRY
Other Precautions Showers and EYE WASH FOUNTAINS SHOULD BE MADE AVAILABLE WHERE CHEMICALS ARE USED.	W-00 8 07
Section VIII - Control Measures	
Respiratory Protection (Specify Type) USE NIOSH APPROVED EQUIPMENT WHEN AIRDORNE EXPOSURE LIMITS ARE	XCEEDED

METAL DOOCESSING SYSTEMS



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MATERIAL SAFETY DATA SHEET

5292

	Section VIII - Cont	rol Measures Cont.
VENTILATION	Local Mechanical RECOMMENDED TO MAINTAIN BE	LOW TLV
Protective 616 NEOPRENE		frolection Lash Goggles or Face (ELD
	ve Clothing or Equipment VE CLOTHING SUFFICIENT TO PREVENT	SKIN CONTACT.
	ROUGHLY BEFORE EATING, SMOKING OR	USING TOILET FACILIT - E.
	Section IX - Additional	Information
D.O.T. Proper	Shipping Name: ALKALINE LIQUID, N.O.S.	
D.O.T. Hazard	Class: CORROSIVE MATERIAL	
D.O.T. Identi	ication #: NA-1719	

TRW-00808

THE INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE DEPENDABLE AND IS 12 JURIATE TO THE BES OF THE SELLER'S KNOWLEDGE; HOWEVER, THE SELLER MAKES NO WARRANTY WHATSOEVER, EXPRESSED, IMPLI ASSUMES ALL SUCH RISK

METAL PROCESSING SYSTEMS 📥



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MATERIAL SAFETY DATA SHEET

52921

						529
		Sec	tion	1		
Identity CORROSOL 52921			Date Prepared 02/20/91		Date Revised 07/13/90	
		kepa Kealth:	Cari 3 Fi	appability: 0	REACTIVITY:	1
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Section II	- Hazaı	dous	Ingredie	nts	
Hazardous Ingredients		SARA 313	CAS #	OSHA - PEL	ACGIH TLV-TWA	Other Hazar
SODIUM HYDROXIDE (CAUSTIC SODA LIQUIC		t > 50 %	1310-73-2	2 MG/CVM (C) NIOSH - 2 MG	2 HB/CUM (C) 1/OUM/15% (C)	CORROSIVE
NO COMPONENT WAS FOUND 1	TO BE CARCINOGENIC IN NT	P, IANC OR GS	¥4 			ده فنشسات است به باشد سبت ج.
Section	on III - Phy	sical/	Chemic	al Chara	cteristi	cs
Boiling Point	NOT DETERMINE	D	Specifi	c Gravity (H20=	1 45	· · · · · · · · · · · · · · · · · · ·
Vapor Pressure (mm Hg)	NOT DETERMINE	0	Percent by Vol	Volatile (5)	55 (2)	
Vapor Density (AIR=Refere	ence) NOT DETERMINE			tion Rate.		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
Water Soluble	ves			i inga Marangan		
Appearance and Odor LIGHT ST	TRAW-COLORED LI	αιυρ				
Sect	ion IV - Fir	e and f	Explos	ion Haza	rd Data	
Flash Point (Method Used) NOT FLAMMABLE				e Liaits PALICABLE	LEL	UEL.
Extinguishing Media CAF	RBON DIOXIDE, D	RY CHEMI	CAL. FO	AM, ALCOH	OL FOAM.	· a S. A · · · · · · · · · · · · · · · · · ·
Special Fire Fighting Pro AFPARATUS WITH (ocedures WEAR SELF FULL FACE PIECE	CONTAIN AND PRO	ED BREA	THING CLOTHING	WHILE FIGH	TING FIRE
Urasual Fire and Explosio	n Hazards NONE KNO	WN.				
	Section	V - R	eactiv	ity Data		
	Conditions to Avo * NONE KNOWN	id				·
INCOMPATIBILITY (Material STRONG ACIDS	is to Avoid)			0908-2175	TRW	-00809
	AAETAI	PROCES	CING CV	CTEMS ==		



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MATERIAL SAFETY DATA SHEET

CORROSOL 52921

52921

Section V - Reactivity Data Cont.

Hazardous Decomposition Products

NONE KNOWN

HAZARDOUS FOL YMERIZATION May Occur Conditions to Avoid

Will Not Occur * NONE

Section VI - Health Hazard Data

Primary Routes of Enter: Intelation? # Skin? # Ingestion?

Effects of Overexposure MAY CAUSE MINOR TO MAJOR EVENS DEPENDING UPON DURATION OF EXPOSURE TO SKIN. MAY CAUSE SEVERE EYE IRRITATION AND BURNS. INHALATION OF MIST MAY CAUSE DAMAGE TO NASAL AND RESPIRATORY PASSAGES. INGESTION MAY RESULT IN SEVERE DAMAGE TO MUCOUS MEMBRANES AND DEEP TISSUE.

Medical Conditions Aggravated by Overexposure

NONE FOUND

Emergency and First Aid Procedures:

Ere (Contact): FLUSH EYES WITH COPIOUS AMOUNTS OF WATER FOR 15 MINUTES AND CONTACT PHYSICIAN IMMEDIATELY.

Skin (Contact): FLUSH WITH WATER FOR 15 MINUTES CONTACT PHYSICIAN IF IRRITATION FERSISTS

Ingestion (Ingestion): DRINK LARGE QUANTITIES OF MILK OR WATER. CONSULT PHYSICIAN IMMEDIATELY.

Inhalation (Breathing): REMOVE TO FRESH AIR.

Section VII - Precautions for Safe Handling & Use

Steps to be taken in Case Material is Released or Spilled

CONTAIN SPILL AND RECOVER CLEAN MATERIAL. NEUTRALIZE WITH DILUTE ACID.

Waste Disposal Method: DISPOSE IN ACCORDANCE WITH LOCAL. STATE AND FEDERAL REGULATIONS.

Precautions to be Taken for Handling and Storage STORE ABOVE FREEZING.

KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. STORE IN COOL, CLEAN, DRY LOCATION, STOCK SHOULD BE ROTATED.

Other Precautions SHOWERS AND EVE WASH FOUNTAINS SHOULD BE MADE AVAILABLE WHERE CHEMICALS ARE USED.

TRW-00810 _

Section VIII - Control Measures

Respiratory Protection (Specify Type)

USE NIOSH APPROVED EQUIPMENT WHEN AIRBORNE EXPOSURE LIMITS ARE EXCEEDED.

METAL PROCESSING SYSTEMS



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MATERIAL SAFETY DATA SHEET

CORROSOL 52921

52921

Sec	tion	V	III	 Contro	l Measu	ares Cont.

VENTILATION

Locai

Mechanical RECOMMENDED TO MAINTAIN BELOW TEV

Protective Gloves

NEOFRENE RUBBER

Eye Protection

SPLASH COGGLES OR FACE SHIELD

Other Protective Clothing or Equipment

PROTECTIVE CLOTHING SUFFICIENT TO PREVENT SKIN CONTACT.

Work/Hygienic Practices

WASH THOROUGHLY BEFORE EATING, SMOKING OR USING TOILET FACILITIES.

Section IX - Additional Information

D.O.T. Proper Shipping Name: CAUSTIC ALKALI LIQUIDS, N.O.S.

(SOD)UM HYDROXIDE)

B.O.T. Hazard Class: CORROSIVE MATERIAL

.D.O.T. Identification #: UN-1713

TRW-00811

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METAL PROCESSING SYSTEMS

CREAM OF TARTAR FCC POWD

REVISION OF-04-19-89

ORDER NO: 240501546 PROD NO: 04102454

Received JUN - 5 1992

MAIL TO:

24026847 TREDERICK GUMM CHEM CO 20 INDUSTRIAL DRIVE

SMITHFIELD

RI 02917

VAN WATERS & ROGERS INC. 1600 NORTON BLDG. SEATTLE, WA 98104-1564 -----EMERGENCY ASSISTANCE-----FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800) 424-9300. -----FOR PRODUCT AND SALES INFORMATION-------CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE -----PRODUCT IDENTIFICATION-----PRODUCT NAME: CREAM OF TARTAR COMMON NAMES/SYNONYM: POTASSIUM CAS NO.: 868-14-4 VW&R CODE: P1149 TARTRATE DATE ISSUED: 10/87 SUPERCEDES: FORMULA: KHC4H4O6 HAZARD RATING (NFPA 704 CRITERIA)
HEALTH: 0
FIRE: 0
REACTIVITY: 0 HAZARD RATING SCALE: O=MINIMAL 3=SERIOUS O=MINIMAL 1=SLIGHT 4=SEVERE SPECIAL: NONE 2=MODERATE EXPOSURE LIMITS, PPM OSHA ACGIH OTHER L TLV LIMIT HAZARD COMPONENTS CAS NO. 7. >99 NONE NONE POTASSIUM TARTRATE 868-14-4 NONE NONE ----PHYSICAL PROPERTIES-------BOILING POINT, DEG F: NOT VAPOR PRESSURE, MM HG/20 DEG C: NOT APPLICABLE APPLICABLE VAPOR DENSITY (AIR=1): NOT APPLICABLE APPLICABLE SPECIFIC GRAVITY (WATER=1): 1.956 WATER SOLUBILITY, %: 1G/165 ML APPEARANCE AND ODOR: EVAPORATION RATE (BUTYL ACETATE=1): NOT ODORLESS WHITE CRYSTALS OR POWDER, PLEASANT ACID TASTE. APPLICABLE APPLICABLE ------FIRST AID MEASURES------------------IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION. IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION. IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND INVOICE: 240501546 PROD: 04102454 03:15:33 14 JUL 1989 CUST: 24026847

AUG 8 9 RECO

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REVISION OF: 04-19-89

WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

IF SWALLOWED: IF CONSCIOUS, IMMEDIATELY INDUCE VOMITING BY GIVING 2 GLASSES OF WATER AND STICKING A FINGER DOWN THE THROAT. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

PRIMARY ROUTES OF EXPOSURE: INHALATION, SKIN OR EYE CONTACT.

SIGNS AND SYMPTOMS OF EXPOSURE INHALATION: NONE CURRENTLY KNOWN.

EYE CONTACT: NONE CURRENTLY KNOWN.

SKIN CONTACT: NONE CURRENTLY KNOWN.

SWALLOWED: NONE CURRENTLY KNOWN.

CHRONIC EFFECTS OF EXPOSURE: NO SPECIFIC INFORMATION AVAILABLE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED.

DRAL:

NO DATA FOUND

DERMAL:

NO DATA FOUND

INHALATION:

NO DATA FOUND

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: NONE

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MINIMIZING DUST EMISSIONS AT THE POINT OF USE.

RESPIRATORY PROTECTION: IF USE CONDITIONS GENERATE DUSTS, WEAR A NIOSH-APPROVED RESPIRATOR APPROPRIATE FOR THOSE EMISSION LEVELS. APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CART-RIDGE RESPIRATOR WITH PARTICULATE FILTERS, A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR.

EYE PROTECTION: CHEMICAL GOGGLES AND FULL FACESHIELD UNLESS A FULL FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, RUBBER BOOTS, RUBBER BOOTS, RUBBER APRON.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

-------FIRE AND EXPLOSION INFORMATION------

FLASH POINT, DEG F: NO DATA FOUND METHOD USED: NO DATA FOUND

FLAMMABLE LIMITS IN AIR, %
LOWER: NO DATA FOUND
UPPER: NO DATA FOUND

EXTINGUISHING MEDIA: USE WATER SPRAY, DRY CHEMICAL, CO2, OR ALCOHOL FOAM.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE W

PROD: 04102454 03:15:33 14 JUL 1989 CUST: 24026847 INVOICE: 240501546

产1149 MATERIAL SAFETY DATA SHEET 3 CREAM OF TARTAR FCC POWD REVISION OF: 04-19-89 SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE. UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE STABILITY: STABLE POLYMERIZATION: WILL NOT OCCUR CONDITIONS TO AVOID: NONE MATERIALS TO AVOID: ALKALI HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE AND CARBON DIOXIDE AND OXIDES OF POTASSIUM. ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CARTRIDGE RESPIRATOR WITH PARTICULATE FILTERS. WEAR CHEMICAL GOGGLES IF A HALF MASK IS WORN. FOR SMALL SPILLS, SWEEP UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, SHOVEL INTO DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL. COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE. DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.
NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE. -----SPECIAL PRECAUTIONS-----STORAGE AND HANDLING PRECAUTIONS: STORE IN A DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. REPAIR AND MAINTENANCE PRECAUTIONS: NONE. ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CARTRIDGE RESPIRATOR WITH PARTICULATE FILTERS. WEAR CHEMICAL GOGGLES IF A HALF MASK IS WORN. FOR SMALL SPILLS, SWEEP UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, SHOVEL INTO DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL. COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE. OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EXPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL. THIS PRODUCT IS INTENDED FOR USE IN FOOD, ANIMAL FEED, DRUG, OR COSMETIC MANUFACTURE AND IT HAS BEEN PRODUCED AND PACKAGED IN ACCORDANCE WITH STRICT QUALITY PRACTICES. MAINTAIN THIS QUALITY LEVEL BY STORING THIS PRODUCT AWAY FROM OTHER CHEMICALS, HANDLING IT WITH CARE, AND AVOIDING ALL SOURCES OF CONTAMINATION. HANDLING IT WITH CARE, AND AVOIDING ALL SOURCES OF CONTAMINATION. -----FOR ADDITIONAL INFORMATION-------

-----NDTICE-----

***VAN WATERS & ROGERS INC. ("VW&R") EXPRESSLY DISCLAIMS ALL EXPRESS

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CREAM OF TARTAR FCC POWD

REVISION OF: 04-19-89

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**** END OF MSDS ****

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Received 7/30/90 Dept 717



MATERIAL SAFETY DATA SHEET

ENTEKO CU-56	

P.O. BOH 1900 NEW HAVEN, CT 06508

NEM HHNEN	1, LI U	0208										
EMERGENCY PLANTS	203- 312-	934-8611 598-3210	(8:30am-5 (8:30am-5	5pı	m CST)	PRODUC DATE IS	SUE	D:	2/9/89			
MFSA		644-5626	(24 hou			SUPERC			4/30/8	-		
CHEMTREC	800-	424-9300	(Transpo	ert	ation)	PREPAR	(EH:		F.R. Hi			
		****							() () () () () () () () () ()			
II. HAZARE COMPO		INGREDI			NAME	040	10	061	IA DEL	TAGG	IH-TLV	
	JNENI				NAME	CAS			IA-PEL			%
Methanol			viethyl alcohol			67-56-1		260	mg/m3	260	mg/m3	>40
Benzotriazole						95-14-7		N1*		NI*		<5
Sodium m-Nitro	benzen	esulfonate				127-68-	4	NI		NI		<5
Water						7732-18	3-5	NI		NI		>45
*Recommended	d: PEL:	15 mg/m3; ⁻	TLV: 10 mg/mi	3								
III. PHYSIC			ES							_		
SPECIFIC GRA			0.950]	BOILING POIN	√T, °F	172					
EVAP.RATE (B	UTYL A	CETATE=1)	NI] ·	MELTING PO	NT, °F	20					
VAPOR PRESS	URE, mr	nHg	55]	SOLUBILITY I	N WATER	com	piete				
VAPOR DENS	ITY (AIF	(=1)	NI	7	APPEARANCE	NCE light yellow liquid						
pH (AS IS)			7.4]	ODOR .	alcoholic						
IV. FIRE A			N HAZARD		DATA FLAMMABLE L	IMITS /AII	B) T	Ni	LE	: 1	NI	UEL
EXTINGUISHIN			.,, 00 (0.0.,		EARTHADEE E		''/					
Not Combustib	X	Water fog or sprav	Dioxide	<u>_</u>	Dry X Chemical	Alcohol Foam		oam [Sand			
SPECIAL FIRE I Wear NIOSH a and release of	pproved	full protective	RES	sei	f-contained brea	athing appa	ratus.	Кеер со	ntainers	cool to	prevent r	upture
UNUSUAL FIRE At high temper				nitr	rogen and sulfu	r.						

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Page 2 of 4	2806	ENTEK®	CU-56	2/9/89
V. HEALTI	H HAZARD DATA			
	ACUTE EXPOSURE:			
NHALATION:	Dizziness, drowsiness, disturba	ance of vision.		!
				
NGESTION:	May be fatal and can cause blin	dness.		
SKIN:	Can cause irritation.			İ
				į
				,
YES:	Can cause severe irritation, da	maga ta ayaa		
E1E3.	Can cause severe imiation, ba	mage to syes.		
FEFENTS OF	CHRONIC EXPOSURE:			
	osure may lead to impairment (of vieion		
r rololiged exp	codie may read to impairment	or Maiori.		
CARCINGE	No. No. 15 and 1	0.14		
REFERENCE:	N: Not listed by NTP, IARC, O	SHA		
	AND FIRST AID PROCED	IDEC		
		ated area. If breathing has stopped	ad requesitate and administer	r ovvoen if
	available.		ou, respectate and administr	CAYGON II
	Seek immediate medical attent	ion.		
INGESTION:	Never give anything by mouth	to an unconscious person, obtain	immediate medical attention.	If vomiting occurs
		ar. If swallowed give large amou	nts of water and INDUCE VO	MITING.
	Seek immediate medical attent	ion.	•	
SKIN:	Immediately week conteminate	d skin with plenty of water for 15	minutes. Pomovo contemino	tod elething and
OKII4.		e reuse. Discard footwear if it car		teo clothing and
	Seek immediate medical attent			
EYES:	Immediately flush eyes with pl	enty of water for at least 15 minu	tes holding lids apart to ensu	are flushing of
	entire surface. Washing eyes	within several seconds of exposure		
	Seek immediate medical attent	tion.		

Page 3 of 4	2806	<u> </u>	ENTEK® CU-56	2/9/89
VI. PRECAUTI	IONS FOR SAFE	HANDLING A	ND USE	
PILL PROCEDURE				
Protect area from a with suitable mater State and Federal	ial such as sand, earth	not breath mist or va , then transfer to clea	pors. Wear protective equipment. Com an steel drum and cover. Dispose of i	tain spill and soak up n accordiance with Local,
	NDLING PRECAUTIONS			
Store in cool dry p	lace; avoid heat, sparki	s and open flame.		
ADDITIONAL INFO	RMATION:			
Use explosion prod	of electrical equipment.			
VII. CONTROL	L MEASURES			
VENTILATION: Loc	cal exhaust recommend	ed.		
	NIOSH approved resp e cartridge filter for o		ntration is greater than the TLV or PE	L.
EYE PROTECTION:	Safety glasses	X Chemical safety goggles	X Face shield	
PROTECTIVE GLOV	ES: X Neoprene	Natural	ther:	
OTHER PROTECTI	VE CLOTHING OR EQU		***	
Chemically resista	nt coveralis, hat, and s	hoes or boots.		
WORK/HYGENIC P	PACTICES:			
		should be available	Wash thoroughly after handling.	
Line, goine, eye in	ion and calcily chower	modia de avalladie.	Trush more grily and manusing.	
ADDITIONAL INFO	RMATION:			
			ste Disposal Procedures. For major sp	ills consult Enthone for
disposal assistance	e. Dispose of in accord	Jance with Local, Sta	te, and Federal regulations.	
CAS = Chemical A	betract Service		PEL = OSHA Permissible Expos	ure Limit
NI = No relevant in	nformation available		TLV = ACGIH Threshold Limit Va	alue
NA = Not applicable	e imed as allowed under	20 CED 1010 1000	NTP = National Toxicology Prog	
TUB SBCTBI = CIR	HING E2 SHOWED UNCE!	29 CFH 1910.1200	IARC = Intil Agency for Researc	n on Cancer

Page 4 of 4	2806	ENTEK®	CU-56	2/9/89						
	TTY DATA									
X Stable CON Unstable	DITIONS TO AVOID: S	table under normal conditions. S	See incompatibility information	on.						
	(Materials to avoid): A	ikali metals, concentrated nitric	and sulfuric acids, acyl chi	orides.						
HAZARDOUS DECOMPOSITION PRODUCTS: Toxic carbon monoxide, carbon dioxide, oxides of nitrogen and sulfur, also nitroaromatics.										
HAZARDOUS	May occur COND	OTTIONS TO AVOID: NA								
POLYMERIZATION	X Will not occur									
IX. ADDITIONA	AL INFORMATION									
(40 CFR 372). The	chemical(s) are listed in Sengredient concentration wh	which are subject to the reporting ction II, HAZARDOUS INGREDIE ich will be within 5% of the figur	NTS, along with the CAS (CI	hemical Abstract						
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This Material Safety Data Sheet may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Enthone, Inc. furnishes the data contained herein in good faith at customer's request without liability or legal responsibility for same whatsoever, and no warranty or guarantee, express or implied, is made with respect to such data; nor does Enthone, Inc. grant permission, recommendation, or inducement to infringe any patent whether owned by Enthone or others. The data is offered solely for your information and consideration. Since conditions of use are beyond Enthone's control, user assumes all responsibility and risk.

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FFF	III	SS		HH	HH	EE	RR	RR
FFFFFFF	III	85		HHH	HHH	EEEEEEE	RRR	RR
FFFFFFFF	III		SS	HHH	ннн	EEEEEEE	RRR	R
FFF	III		SS	HH	нн	EE	RR	RR
K FF	III	SS	SS	HH	HH	EEEEEEE	RR	RR
FFF	III	SSSS	S	HH	HH	EEEEEEE	RR	RR
\								

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MM MM	SS	DD DD	55
MM MM	SSSSS	DDDDDD	SSSSS

IMPORTANT SAFETY INFORMATION -- DO NOT DISCARD.

PLEASE ROUTE TO COMPANY SAFETY OFFICER.

FISHER SCIENTIFIC HAS A COMPLETE LINE OF SAFETY PRODUCTS AND INFORMATION FOR THE LABORATORY. CONTACT YOUR LOCAL FISHER BRANCH FOR FILMS, BROCHURES, CATALOGS AND PRODUCTS.

ELLIE GOVENNELLA PURCHASING AGENT TRW FASTENERS DIV 31 AMES STREET CAMBRIDGE MA 02142

IF NAME AND/OR ADDRESS HAVE CHANGED, CONTACT YOUR FISHER SALES REPRESENTATIVE OR LOCAL FISHER BRANCH.

FOR EACH CHEMICAL, AN MSDS SHEET WILL BE SENT ONLY ON THE 1ST SHIPMENT UNLESS A SUBSTANTIAL REVISION OCCURS.

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> > TRW-00820

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CUPRIC CHLORIDE

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CUPRIC CHLORIDE
CUPRIC CHLORIDE
CUPRIC CHLORIDE

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC CHEMICAL DIVISION 1 REAGENT LANE FAIR LAWN NJ 07+10 (201) 796-7100 EMERGENCY CONTACTS:
GASTON L, PILLORI: (201) 796-7100
AFTER BUSINESS HOURS; HOLIDAYS:
(201) 796-7523
CHEMTREC ASSISTANCE: (800) 429-9300

DATE: 0+/30/89 PO NBR: C++21 ACCT: 8192+9-02 INDEX: 0+891110013 CAT NO: C+5+3

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SUBSTANCE IDENTIFICATION

CAS-NUMBER 7447-39-4

SUBSTANCE: **CUPRIC CHLORIDE**

TRADE NAMES/SYNONYMS:

COPPER(II) CHLORIDE; CUPRIC DICHLORIDE; COPPER CHLORIDE (CUCL2);

COPPER CHLORIDE; COPPER BICHLORIDE; COPPER DICHLORIDE; COPPER(2+) CHLORIDE;

STCC +9++173; UN 2802; C-+5+; C-+55; CL2CU; ACC05620

CHEMICAL FAMILY: INORGANIC SALT

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MOLECULAR FORMULA: CU-CL2

MOLECULAR WEIGHT: 134.45

CERCLA RATINGS (SCALE 0-3); HEALTH:3 FIRE:0 REACTIVITY:0 PERSISTENCE:3 NFPA RATINGS (SCALE 0-4): HEALTH:U FIRE:0 REACTIVITY:0

COMPONENTS AND CONTAMINANTS

COMPONENT: CUPRIC CHLORIDE

PERCENT: 100.0

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS: COPPER DUST AND MIST (AS CU): 1 MG/M3 OSHA TWA 1 MG/M3 ACGIH TWA

SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

CUPRIC CHLORIDE: 10 Pounds Cercla Section 103 Reportable Quantity

PHYSICAL DATA

DESCRIPTION: BROWNISH-YELLOW HYGROSCOPIC MICROCRYSTALLINE POWDER.

BOILING POINT: 1819 F (993 C) (DECOMPOSES) MELTING POINT: 1148 F (620 C)

SPECIFIC GRAVITY: 3.386 a 25 C SOLUBILITY IN WATER: 70.6% a 0 F

SOLVENT SOLUBILITY: SOLUBLE IN ETHANOL, METHANOL, ACETONE, HOT SULFURIC ACID.

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD; NEGLIGIBLE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, HALON, WATER SPRAY OR STANDARD FOAM
(1987 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800. +).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR STANDARD FOAM (1987 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.4).

FIREFIGHTING:
MOVE CONTAINERS FROM FIRE AREA IF POSSIBLE. COOL CONTAINERS EXPOSED TO FLAMES
WITH WATER FROM SIDE UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM STORAGE TANK
ENDS (1987 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.4, GUIDE PAGE 60).

USE AGENTS SUITABLE FOR TYPE OF FIRE, AVOID BREATHING CORROSIVE VAPORS, KEEP UPWIND.

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49CFR172, 101: ORM-B

TRW-00821

CUPRIC CHLORIDE PAGE 02 OF 04 DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49CFR172, 101 AND 172, 402: NONE DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49CFR173.800 EXCEPTIONS: 49CFR173.505 TOXICITY CUPRIC CHLORIDE: TOXICITY DATA: XICITY DATA: ANHYDROUS: 2 HYDROUS: 200 MG/KG ORAL-HUMAN LDLO; 1+0 MG/KG ORAL-RAT LD50; 190 MG/KG ORAL-RAT LD50; 190 MG/KG ORAL-MOUSE LD50; 31 MG/KG ORAL-GUINEA PIG LD50; 7+00 UG/KG INTRAPERITONEAL-MOUSE LD50; 100 MG/KG SUBCUTANEOUS-GUINEA PIG LDLO; 17,500 UG/KG INTRAVENOUS-MOUSE LD50; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS). EFFECTS DATA (RTECS).
DIHYDRATE: NO DATA AVAILABLE.
CARCINOGEN STATUS: NONE.
LOCAL EFFECTS: IRRITANT- EYE, SKIN, AND MUCOUS MEMBRANES.
ACUTE TOXICITY EFFECTS: TOXIC BY INGESTION.
TARGET EFFECTS: POISONING MAY AFFECT THE LIVER, KIDNEYS AND SPLEEN.
AT INCREASED RISK FROM EXPOSURE (TO COPPER SALTS): PERSONS WITH PRE-EXISTING RESPIRATORY, LIVER, SKIN, KIDNEY, HEMATAPOETIC OR WILSON'S DISEASE. HEALTH EFFECTS AND FIRST AID INHALATION: CUPRIC CHLORIDE: IRRITANT. RITANT,
ACUTE EXPOSURE- MAY CAUSE IRRITATION OF MUCOUS MEMBRANES, SORE THROAT,
COUGHING, AND SHORTNESS OF BREATH, INHALATION OF COPPER DUST MAY CAUSE
AN ILLNESS SIMILAR TO THE COMMON COLD WITH SENSATIONS OF CHILLS AND
STUFFINESS OF THE HEAD.
CHRONIC EXPOSURE- PROLONGED INHALATION OF DUST OR MIST OF COPPER SALTS MAY
CAUSE CONGESTION OF THE NASAL MUCOUS MEMBRANES, SOMETIMES OF THE PHARNYX,
AND ON OCCASIONS ULCERATION AND PERFORATION OF THE NASAL SEPTUM, ATROPHIC
CHANGES IN THE MUCOUS MEMBRANES WERE NOTED IN SUBJECTS EXPOSED TO COMPLEX
COPPER SALTS FOR LONG PERIODS OF TIME, INHALATION OF COPPER COMPOUNDS HAS
CAUSED INJURY TO THE LUNGS AND LIVER WITH HEMOCHROMATOSIS IN ANIMALS.
REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS. FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION, KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY. SKIN CONTACT: CUPRIC CHLORIDE: IRRITANT. ACUTE EXPOSURE- DIRECT CONTACT MAY CAUSE REDNESS, PAIN, AND IRRITATION.

COPPER SALTS HAVE BEEN REPORTED TO CAUSE AN ITCHING PAPULOVESICULATION,

SKIN DISCOLORATION AND ECZEMATOID LESIONS,

CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT WITH SOME COPPER SALTS HAS

RESULTED IN IRRITATION, NECROSIS, AND GREENISH SKIN DISCOLORATION.

ALLERGIC CONTACT DERMATITIS, ALTHOUGH RARE, HAS BEEN REPORTED.

RST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES), GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT: CUPRIC CHLORIDE:

RITANT.

ACUTE EXPOSURE- DIRECT CONTACT MAY CAUSE REDNESS, PAIN, AND BLURRED VISION.

APPLICATION OF A 0.08 TO 0.16 M SOLUTION OF CUPRIC CHLORIDE TO THE

CORNEAS OF RABBITS AFTER THE REMOVAL OF THE EPITHELIUM CAUSED A

SEVERE REACTION WITH PERMANENT OPACIFICATION, SOME COPPER SALTS

HAVE BEEN REPORTED TO CAUSE CONJUNCTIVITIS, CORNEAL ULCERATION, AND

TURBIDITY POSSIBLY WITH PALPEBRAL EDEMA, COPPER PARTICLES EMBEDDED IN

THE EYE MAY RESULT IN A PRONOUNCED FOREIGN-BODY RESPONSE WITH

CHARACTERISTIC DISCOLORATION OF OCULAR TISSUE,

CHRONIC EXPOSURE- REPEATED AND PROLONGED CONTACT WITH IRRITANTS MAY CAUSE

CONJUNCTIVITIS

CONJUNCTIVITIS.

RST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION: CUPRIC CHLORIDE:

OXIC.
ACUTE EXPOSURE- THE MEDIAN LETHAL DOSE IN RATS WAS 140 MG/KG. INGESTION
MAY CAUSE ABDOMINAL PAIN, VOMITING AND DIARRHEA. INGESTION OF COPPER
SALTS MAY CAUSE AN IMMEDIATE METALLIC TASTE, SALIVATION, NAUSEA,
EPIGASTRIC BURNING, ULCERS, HEMORRHAGIC GASTRITIS, ANURIA, COMA,
CONVULSIONS AND DEATH.
CHRONIC EXPOSURE- REPEATED AND PROLONGED INGESTION OF COPPER SALTS HAS
PRODUCED HEMOLYTIC ANEMIA AND LIVER, KIDNEY, AND SPLEEN DAMAGE IN ANIMALS.

FIRST AID- IF VICTIM IS CONSCIOUS, IMMEDIATELY GIVE 2 TO 4 GLASSES OF WATER, AND INDUCE VOMITING BY TOUCHING FINGER TO BACK OF THROAT, GET MEDICAL ATTENTION IMMEDIATELY,

ANTIDOTE: THE FOLLOWING ANTIDOTE(S) HAVE BEEN RECOMMENDED. HOWEVER, THE DECISION AS TO **CUPRIC CHLORIDE**

PAGE 03 OF 04
WHETHER THE SEVERITY OF POISONING REQUIRES ADMINISTRATION OF ANY ANTIDOTE AND
ACTUAL DOSE REQUIRED SHOULD BE MADE BY QUALIFIED MEDICAL PERSONNEL.

COPPER POISONING:
GIVE CALCIUM DISODIUM EDETATE 15-25 MG/KG (0.08-0.125 ML OF 20% SOLUTION PER
KILOGRAM BODY WEIGHT) IN 250-500 ML OF 5% DEXTROSE INTRAVENOUSLY OVER A 1 TO 2
HOUR PERIOD TWICE DAILY. THE MAXIMUM DOSE SHOULD NOT EXCEED 50 MG/KG/DAY. THE
DRUG SHOULD BE GIVEN IN 5-DAY COURSES WITH A REST PERIOD OF AT LEAST 2 DAYS
BETWEEN COURSES, AFTER THE FIRST COURSES SUBSEQUENT COURSES SHOULD NOT EXCEED
SO MG/KG/DAY. DAILY URINALYSES SHOULD NOT BE DONE DURING THE TREATMENT PERIOD.
THE DOSAGE SHOULD BE REDUCED IF ANY UNUSUAL URINARY FINDINGS APPEAR.
INTRAVENOUS ADMINISTRATION IS CONTRAINDICATED IN THE PRESENCE OF ELEVATED
CEREBROSPINAL FLUID PRESSURE, PENICILLAMINE IS ALSO EFFECTIVE IN COPPER
POISONING, GIVE UP TO 100 MG/KG/DAY (MAXIMUM 1 G/DAY) DIVIDED INTO + DOSES
FOR NO LONGER THAN 1 WEEK, IF A LONGER ADMINISTRATION PERIOD IS WARRANTED,
DOSAGE SHOULD NOT EXCEED +0 MG/KG/DAY, GIVE THE DRUG ORALLY, HALF AN HOUR
BEFORE MEALS (DREISBACH, HANDBOOK OF POISONING, 11TH ED.), ANTIDOTE SHOULD
BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL.

REACTIVITY

REACTIVITY: STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES: CUPRIC CHLORIDE: POTASSIUM: POSSIBLE EXPLOSION ON IMPACT. SODIUM: POSSIBLE EXPLOSION ON IMPACT.

DECOMPOSITION: THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC AND CORROSIVE FUMES OF CHLORIDES.

POLYMERIZATION: HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE, FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

MAY BURN BUT DOES NOT IGNITE READILY. FLAMMABLE, POISONOUS GASES MAY ACCUMULATE IN TANKS AND HOPPER CARS. MAY IGNITE COMBUSTIBLES (WOOD, PAPER, OIL, ETC.).

PREVENT DISPERSION OF DUST IN AIR,

SOIL SPILL:
DIG HOLDING AREA SUCH AS LAGOON, POND OR PIT FOR CONTAINMENT.

USE PROTECTIVE COVER SUCH AS A PLASTIC SHEET TO PREVENT MATERIAL FROM DISSOLVING IN FIRE EXTINGUISHING WATER OR RAIN.

WATER SPILL: USE MECHANICAL DREDGES OR LIFTS TO EXTRACT IMMOBILIZED MASSES OF POLLUTION AND PRECIPITATES.

ADD SUITABLE AGENT TO NEUTRALIZE SPILLED MATERIAL TO PH-7.

OCCUPATIONAL SPILL;
DO NOT TOUCH SPILLED MATERIAL. STOP LEAK IF YOU CAN DO IT WITHOUT RISK, FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL, FOR SMALL DRY SPILLS, WITH CLEAN SHOVEL PLACE MATERIAL INTO CLEAN, DRY CONTAINER AND COVER, MOVE CONTAINERS FROM SPILL AREA, FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. KEEP UNNECESSARY PEOPLE AWAY, ISOLATE HAZARD AREA AND DENY ENTRY.

REPORTABLE QUANTITY (RQ): 10 POUNDS
THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 30+ REQUIRES
THAT A RELEASE EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY FOR THIS
SUBSTANCE BE IMMEDIATELY REPORTED TO THE LOCAL EMERGENCY PLANNING COMMITTEE
AND THE STATE EMERGENCY RESPONSE COMMISSION (+0 CFR 355.+0). IF THE RELEASE OF
THIS SUBSTANCE IS REPORTABLE UNDER CERCLA SECTION 103, THE NATIONAL RESPONSE
CENTER MUST BE NOTIFIED IMMEDIATELY AT (800) +2+-8802 OR (202) +26-2675 IN THE
METROPOLITAN WASHINGTON, D.C. AREA (+0 CFR 302.6).

PROTECTIVE EQUIPMENT

VENTILATION: PROVIDE LOCAL EXHAUST OR PROCESS ENCLOSURE VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.

TRW-00823

CUPRIC CHLORIDE

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RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS
BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO
CHEMICAL HAZARDS OR NIOSH CRITERIA DOCUMENTS; OR DEPARTMENT OF LABOR,
29CFR1910 SUBPART Z.

THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE OF OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION.

COPPER DUST AND MIST (AS CU):

- 5 MG/M3- ANY DUST AND MIST RESPIRATOR EXCEPT SINGLE-USE RESPIRATORS.
- 10 MG/M3- ANY DUST AND MIST RESPIRATOR EXCEPT SINGLE-USE AND QUARTER-MASK RESPIRATORS, ANY SUPPLIED-AIR RESPIRATOR, ANY SELF-CONTAINED BREATHING APPARATUS,
- 25 MG/M3- ANY POWERED AIR-PURIFYING RESPIRATOR WITH A DUST AND MIST FILTER, ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS FLOW MODE.
- 50 MG/M3- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR WITH A HIGH-EFFICIENCY PARTICULATE FILTER.

 ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.

 ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE.

 ANY POWERED AIR-PURIFYING RESPIRATOR WITH A TIGHT-FITTING FACEPIECE AND A HIGH-EFFICIENCY PARTICULATE FILTER.
- 1000 MG/M3- ANY SUPPLIED-AIR RESPIRATOR WITH A HALF-MASK AND OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.
- 2000 MG/M3- ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE AND OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.
 - ESCAPE- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR WITH A HIGH-EFFICIENCY PARTICULATE FILTER.

 "ANY APPROPRIATE ESCAPE-TYPE SELF-CONTAINED BREATHING APPARATUS.
- FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:
 - SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN PRESSURE DEMAND OR OTHER POSITIVE PRESSURE MODE.
 - SUPPLIED-AIR RESPIRATOR WITH FULL FACEPIECE AND OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

CLOTHING: EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES: Employee must wear appropriate protective gloves to prevent contact with this substance,

EYE PROTECTION: EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES TO PREVENT EYE CONTACT WITH THIS SUBSTANCE, CONTACT LENSES SHOULD NOT BE WORN.

AUTHORISM FISHER SCIENTIFIC GROUP, INC. CREATION DATE: 19705/87 REVISION DATE: 12/23/85

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0908-2190

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CUPRIC CHLORIDE, DIHYDRATE
CUPRIC CHLORIDE, DIHYDRATE
CUPRIC CHLORIDE, DIHYDRATE

FISHER SCIENTIFIC CHEMICAL DIVISION I REAGENT LANE FAIR LAWN NJ 07410 EMERGENCY NUMBER: (201) 796-7100 CHEMTREC ASSISTANCE: (800) 424 9300 (201) 796-7100 THIS INFORMATION IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO U.S. HOWEVER, WE MAKE NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES SUBSTANCE IDENTIFICATION CAS NUMBER 10125-13-0 SUBSTANCE **CUPRIC CHLORIDE, DIHYDRATE** TRADE NAMES/SYNONYMS:
COPPER CHLORIDE DIHYDRATE; COPPER DICHLORIDE DIHYDRATE;
COPPER CHLORIDE (CUCL2), DIHYDRATE, CUPRIC CHLORIDE DIHYDRATE;
COPPER CHLORIDE (CUCL2), DIHYDRATE, CUPRIC CHLORIDE DIHYDRATE;
COPPER CHLORIDE (CUCL2), DIHYDRATE, CUPRIC CHLORIDE, CUCL2), STCC 4944173; UN2802; C-454; C-455, CL2CUH4O2; CHEMICAL FAMILY INORGANIC SALT MOLECULAR FORMULA: CU-CL2.2H20 MOLECULAR WEIGHT: 170.43 CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=0 REACTIVITY=0 PERSISTENCE=3 NFPA RATINGS (SCALE 0-4): HEALTH=U FIRE=0 REACTIVITY=0 COMPONENTS AND CONTAMINANTS COMPONENT: CUPRIC CHLORIDE, DIHYDRATE CAS# 10125-13-0 PERCENT: 100.0 OTHER CONTAMINANTS: NONE EXPOSURE LIMITS COPPER DUST AND MIST (AS CU): 1 MG/M3 DSHA TWA 1 MG/M3 ACGH TWA 1 MG/M3 NIOSH RECOMMENDED TWA 1 MG/M3 DFG MAK TWA (TOTAL DUST), 2 MG/M3 DFG MAK TWA (TOTAL DUST), 2 MG/M3 DFG MAK 30 MINUTE PEAK, AVERAGE VALUE, 4 TIMES/SHIFT MEASUREMENT METHOD: PARTICULATE FILTER; ACID; ATOMIC ABSORPTION SPECTROMETRY; (NIOSH VOL. III # 7029). SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING PHYSICAL DATA DESCRIPTION: GREEN TO BLUE DELIQUESCENT CRYSTALS OR POWDER. BOILING POINT: 1819 F (993 C) (DECOMPOSES) MELTING POINT: 212 F (100 C) SPECIFIC GRAVITY: 2.54 PH: 3.6 @ 0.2 M SOLUTION SOLUBILITY IN WATER: 110% @ 0 C SOLVENT SOLUBILITY: SOLUBLE IN METHANOL, ETHANOL, AND AMMONIUM HYDROXIDE; MODERATELY SOLUBLE IN ACETONE AND ETHYL ACETATE; SLIGHTLY SOLUBLE IN ETHER. LOSES WATER OF HYDRATION BETWEEN 158-392 F (70-200 C) FIRE AND EXPLOSION DATA FIRE AND EXPLOSION HAZARD: NEGLIGIBLE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME. FIREFIGHTING MEDIA: DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

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DATE: 08/27/93 ACCT: 263536-01 INDEX: 04932388389 CAT NO: C4543 PO NBR: 10599 FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5). FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK APPLY COOLING
WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE
IS OUT. STAY AWAY FROM ENDS OF TANKS (1990 EMERGENCY RESPONSE GUIDEBOOK,
DOT P 5800.5, GUIDE PAGE 80). USE AGENTS SUITABLE FOR TYPE OF FIRE. AVOID BREATHING CORROSIVE VAPORS, KEEP UPWIND. TRANSPORTATION DATA DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49-CFR 172.101: DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49-CFR 172.101 AND SUBPART E: NONE DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49-CFR 173.800 EXCEPTIONS: 49-CFR 173.505 TOXICITY CUPRIC CHLORIDE:
TOXICITY DATA:
ANHYDROUS: 17.500 UG/KG INTRAVENOUS-MOUSE LD50: 7400 UG/KG
INTRAPERITONEAL-MOUSE LD50: MUTAGENIC DATA (RTECS).
DIHYDRATE: NO DATA AVAILABLE:
CARCINOGEN STATUS: NONE:
LOCAL EFFECTS: IRRITANT- EYE, SKIN, AND MUCOUS MEMBRANES.
ACUTE TOXICITY LEVEL: INSUFFICIENT DATA.
TARGET EFFECTS: POISONING MAY AFFECT THE LIVER, KIDNEYS AND SPLEEN.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH PRE-EXISTING
RESPIRATORY, LIVER, SKIN, KIDNEY, HEMATOPOIETIC OR WILSON'S DISEASE.* * BASED ON INFORMATION ON COPPER SALTS. HEALTH EFFECTS AND FIRST AID INHALATION: CUPRIC CHLORIDE: IRRITANT
MAY CAUSE IRRITATION OF MUCOUS MEMBRANES, SORE THROAT, COUGHING, AND
SHORTNESS OF BREATH, IMHALATION OF COPPER DUST MAY CAUSE AN ILLNESS SIMILAR
TO THE COMMON COLD WITH SENSATIONS OF CHILLS AND STUFFINESS OF THE HEAD
PROLONGED INHALATION OF DUST OR MIST OF COPPER SALTS MAY CAUSE CONGESTION
OF THE NASAL MUCOUS MEMBRANES, SOMETIMES OF THE PHARNY, AND ON OCCASIONS
ULCERATION AND PERFORATION OF THE NASAL SEPTUM, ATROPHIC CHANGES IN THE
MUCOUS MEMBRANES WERE NOTED IN SUBJECTS EXPOSED TO COMPLEX COPPER SALTS FOR
LONG PERIODS OF TIME. INHALATION OF COPPER COMPOUNDS HAS CAUSED INJURY TO
THE LUNGS AND LIVER WITH HEMOCHROMATOSIS IN ANIMALS. SEE INFORMATION ON
METAL FUME FEVER.
REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS. FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY SKIN CONTACT: CUPRIC CHLORIDE: IRRITANT. RRITANT.
ACUTE EXPOSURE- DIRECT CONTACT MAY CAUSE REDNESS, PAIN, AND IRRITATION
COPPER SALTS HAVE BEEN REPORTED TO CAUSE AN ITCHING PAPULOVESICULATION,
SKIN DISCOLORATION AND ECZEMATOID LESIONS.
CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT WITH SOME COPPER SALTS HAS
RESULTED IN IRRITATION. NECROSIS, AND GREENISH SKIN DISCOLORATION.
ALLERGIC CONTACT DERMATITIS, ALTHOUGH RARE, HAS BEEN REPORTED. FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY. EYE CONTACT: CUPRIC CHLORIDE: IRRITANT. RRITANT

ACUTE EXPOSURE - DIRECT CONTACT MAY CAUSE REDNESS, PAIN, AND BLURRED VISION. APPLICATION OF A 0.08 TO 0.16 M SOLUTION OF CUPRIC CHLORIDE TO THE CORNEAS OF RABBITS AFTER THE REMOVAL OF THE EPITHELIUM CAUSED A SEVERE REACTION WITH PERMANENT OPACIFICATION. SOME COPPER SALTS HAVE BEEN REPORTED TO CAUSE CONJUNCTIVITIS, CORNEAL ULCERATION, AND TURBIDITY POSSIBILY WITH PALPEBRAL EDEMA. COPPER PARTICLES EMBEDDED IN THE EYE MAY RESULT IN A PRONOUNCED FOREIGN-BODY RESPONSE WITH CHARACTERISTIC DISCOLORATION OF OCULAR TISSUE.

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CHRONIC EXPOSURE- REPEATED AND PROLONGED CONTACT WITH IRRITANTS MAY CAUSE CONJUNCTIVITIS. FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY. INGESTION:
CUPRIC CHLORIDE:
ACUTE EXPOSURE- INGESTION MAY CAUSE ABDOMINAL PAIN, VOMITING AND DIARRHEA.
INGESTION OF COPPER SALTS MAY CAUSE AN IMMEDIATE METALLIC TASTE.
SALIVATION, NAUSEA, EPIGASTRIC BURNING, ULCERS, HEMORRHAGIC GASTRITIS,
ANURIA, COMA, CONVULSIONS AND DEATH.
CHRONIC EXPOSURE- REPEATED AND PROLONGED INGESTION OF COPPER SALTS HAS
PRODUCED HEMOLYTIC ANEMIA AND LIVER, KIDNEY, AND SPLEEN DAMAGE IN ANIMALS. INGESTION FIRST AID- DILUTE THE POISON IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR MILK AND REMOVE BY GASTRIC LAVAGE UNLESS THE VICTIM IS ALREADY VOMITING. (DREISBACH, HANDBOOK OF POISONING, 12TH ED.) GET MEDICAL ATTENTION IMMEDIATELY, ADMINISTRATION OF GASTRIC LAVAGE SHOULD BE PERFORMED BY CLIALIFIED MEDICAL PERSONNEL ANTIDOTE:
THE FOLLOWING ANTIDOTE HAS BEEN RECOMMENDED. HOWEVER, THE DECISION AS TO
WHETHER THE SEVERITY OF POISONING REQUIRES ADMINISTRATION OF ANY ANTIDOTE AND
ACTUAL DOSE REQUIRED SHOULD BE MADE BY QUALIFIED MEDICAL PERSONNEL. COPPER POISONING:

GIVE CALCIUM DISODIUM EDETATE 15-25 MG/KG (0.08-0.125 ML OF 20% SOLUTION PER KILOGRAM BODY WEIGHT) IN 250-500 ML OF 5% DEXTROSE INTRAVENOUSLY OVER A 1 TO 2 HOUR PERIOD TWICE DAILY. THE MAXIMUM DOSE SHOULD NOT EXCEED 50 MG/KG/DAY. THE DRUG SHOULD BE GIVEN IN 5-DAY COURSES WITH A REST PERIOD OF AT LEAST 2 DAY. THE DETWEEN COURSES AFTER THE FIRST COURSE, SUBSEQUENT COURSES SHOULD NOT EXCEED 50 MG/KG/DAY. DAILY URINALYSES SHOULD NOT BE DONE DURING THE TREATMENT PERIOD. THE DOSAGE SHOULD BE REDUCED IF ANY UNUSUAL URINARY FINDINGS APPEAR. INTRAVENOUS ADMINISTRATION IS CONTRAINDICATED IN THE PRESENCE OF ELEVATED CEREBROSPINAL FIULD PRESSURE "PENICULLAMINE" IS ALSO EFFECTIVE IN COPPER POISONING, GIVE UP TO 100 MG/KG/DAY (MAXIMUM 1 G/DAY) DIVIDED INTO 4 DOSES FOR NO LONGER THAN 1 WEEK, IF A LONGER ADMINISTRATION PERIOD IS WARRANTED, DOSAGE SHOULD NOT EXCEED 40 MG/KG/DAY GIVE THE DRUG ORALLY, HALF AN HOUR BEFORE MEALS (DREISBACH, HANDBOOK OF POISONING, 12TH ED.). ANTIDOTE SHOULD BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL. REACTIVITY REACTIVITY: STABLE UNDER NORMAL TEMPERATURES AND PRESSURES. INCOMPATIBILITIES: CUPRIC CHLORIDE: POTASSIUM: POSSIBLE EXPLOSION ON IMPACT. SODIUM: POSSIBLE EXPLOSION ON IMPACT. DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC AND HAZARDOUS FUMES OF HYDROGEN CHLORIDE AND OXIDES OF COPPER. POLYMERIZATION: HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES. STORAGE AND DISPOSAL OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. **STORAGE** STORE AWAY FROM INCOMPATIBLE SUBSTANCES. *************** CONDITIONS TO AVOID MAY BURN BUT DOES NOT IGNITE READILY. FLAMMABLE, POISONOUS GASES MAY ACCUMULATE IN TANKS AND HOPPER CARS. MAY IGNITE COMBUSTIBLES (WOOD, PAPER, OIL, ETC.). PREVENT DISPERSION OF DUST. *********************** SPILL AND LEAK PROCEDURES SOIL SPILL: DIG HOLDING AREA SUCH AS LAGOON, POND OR PIT FOR CONTAINMENT. USE PROTECTIVE COVER SUCH AS A PLASTIC SHEET TO PREVENT MATERIAL FROM DISSOLVING IN FIRE EXTINGUISHING WATER OR RAIN.

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WATER SPILL: USE MECHANICAL DREDGES OR LIFTS TO EXTRACT IMMOBILIZED MASSES OF POLLUTION AND PRECIPITATES.

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ADD SUITABLE AGENT TO NEUTRALIZE SPILLED MATERIAL TO PH 7

OCCUPATIONAL SPILL:

DO NOT TOUCH SPILLED MATERIAL STOP LEAK IF YOU CAN DO IT WITHOUT RISK FOR SMALL SPILLS. TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR SMALL DRY SPILLS. WITH CLEAN SHOVEL PLACE MATERIAL INTO CLEAN. DRY CONTAINER AND COVER. MOVE CONTAINERS FROM SPILL AREA FOR LATER DISPOSAL KEEP UNNECESSARY PEOPLE AWAY. ISOLATE HAZARD AREA AND DENY ENTRY

PROTECTIVE EQUIPMENT

VENTILATION: PROVIDE LOCAL EXHAUST VENTILATION SYSTEM TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS
BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO
CHEMICAL HAZARDS, NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF
LABOR, 29 CFR 1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND
IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE REPIRATOR AND
BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND
HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

COPPER DUST AND MIST (AS CU):

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5 MG/M3- ANY DUST AND MIST RESPIRATOR.

10 MG/M3- ANY DUST AND MIST RESPIRATOR EXCEPT SINGLE-USE AND QUARTER MASK RESPIRATORS.*
ANY SUPPLIED-AIR RESPIRATOR.
ANY SELF-CONTAINED BREATHING APPARATUS.

25 MG/M3- ANY POWERED, AIR-PURIFYING RESPIRATOR WITH A DUST AND MIST FILTER ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS FLOW MODE

50 MG/M3: ANY AIR-PURIFYING, FULL-FACEPIECE RESPIRATOR WITH A HIGH-EFFICIENCY PARTICULATE FILTER.
ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE ANY POWERED. AIR-PURIFYING RESPIRATOR WITH A TIGHT FITTING FACEPIECE AND A HIGH-EFFICIENCY PARTICULATE FILTER

2000 MG/M3- ANY SUPPLIED AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ESCAPE- ANY AIR-PURIFYING FULL-FACEPIECE RESPIRATOR WITH A HIGH EFFICIENC PARTICULATE FILTER ANY APPROPRIATE ESCAPE-TYPE, SELF-CONTAINED BREATHING APPARATUS

* IF NOT PRESENT AS A FUME

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS

ANY SELF CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE DEMAND OR OTHER POSITIVE PRESSURE MODE.

ANY SUPPLIED AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING: EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES

EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS
SUBSTANCE.

EYE PROTECTION: EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST RESISTANT SAFETY GOGGLES TO PREVENT EYE CONTACT WITH THIS SUBSTANCE

EMERGENCY EYE WASH. WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES MAY BE EXPOSED TO THIS SUBSTANCE. THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE

AUTHORIZED FISHER SCIENTIFIC, INC CREATION DATE. 06/08/92 REVISION DATE. 03/24/93
-ADDITIONAL INFORMATION

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0908-2193 TRW-00827

FISHER SCIENTIFIC MSDS

IMPORTANT SAFETY INFORMATION -- DO NOT DISCARD.
PLEASE ROUTE TO COMPANY SAFETY OFFICER.

AMERICAN ENGINEERED COMPONENTS 120 ROGERS STREET

CAMBRIDGE

MA 02142

IF NAME AND/OR ADDRESS HAVE CHANGED, CONTACT YOUR FISHER SALES REPRESENTATIVE OR LOCAL FISHER BRANCH.

FOR EACH CHEMICAL, A MSDS SHEET WILL BE SENT ONLY ON THE FIRST SHIPMENT UNLESS A SUBSTANTIAL REVISION OCCURS.

REQUIRED MATERIAL SAFETY DATA SHEETS (MSDS) NOT INCLUDED IN THIS MAILING WILL FOLLOW UNDER SEPARATE COVER.

THIS PACKET MAY CONTAIN MSDS FOR PRODUCTS MANUFACTURED BY OTHERS AND DISTRIBUTED BY FISHER SCIENTIFIC COMPANY. THESE MSDS WERE PREPARED BY THE MANUFACTURER AND FISHER DISCLAIMS ALL LIABILITY FOR THE CONTENT.

FISHER SCIENTIFIC HAS A COMPLETE LINE OF SAFETY PRODUCTS AND INFORMATION FOR THE LABORATORY. CONTACT YOUR LOCAL FISHER BRANCH FOR FILMS, BROCHURES, CATALOGS AND PRODUCTS.



DATE: 3/26/85

REV. DATE: 4/21/86

REVISION NO.: 2

MATERIAL SAFETY DATA SHEET

SECTION 1

MANUFACTURER'S NAME:

HUSSEY COPPER LTD.

ADDRESS:

Washington Street LEETSDALE, PA. 15056

EMERGENCY PHONE NO.:

412-857-4200

CHEMICAL NAME AND SYNONYMS:

COPPER; NICKEL

TRADE NAME AND SYNONYMS:

Cupro Nickel, 90/10, 70/30, CDA Alloy 706, 715

CHEMICAL FAMILY:

COPPER AND NICKEL

SECTION 11 - HAZARDOUS INGREDIENTS								
INGREDIENT	706 PERC	CENT 715	CAS NO.	OSHA-PEL/ACGIH-TLV				
Copper Nickel Iron Manganese	86.5 min 9.0-11.0 1.0-1.75 .75 max	65.0 min 29.0-32.0 1.0 max .25 - 1.0	7440-50-8 7440-02-0 (OXIDE) 1309-37-1 7439-96-5	Exposure Levels See Section V				

HAZARDOUS MIXTURES OF OTHERS LIQUIDS, SOLIDS, OR GASES:

If exposure to copper and nickel dust/fume is kept below Permissible Exposure Limits

(PEL)/Threshold Limit Value (TLV) iron and Manganese along with other trace

impurities should not pose any health risk.

	SECTION 111 - PHYSICAL	L DATA
MELTING	Alloy 706/ 2010° F	Alloy 715/ 2140° F
Vapor Pressure (mm Hg.)	Not Applicable	Not Applicable
Solubility in Water	negligible	negligible
Specific Gravity (H ² O = 1)	8.94	8.94

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used)

Not applicable

Extinguishing Media

Not Applicable

Special Fire Fighting Procedures

Not applicable

TRW-00829

Unusual Fire and Explosion Hazards

Not applicable

^{*} Under normal conditions. Heavy concentrations of fine copper dust may cause flash fir 'f was and to incident sour

SECTION V - HEALTH HAZARD DATA

EXPOSURE LEVELS:

Copper dusts and mists - OSHA (PEL): TWA = 1MG/M3. ACGIH (TLV): TWA = 1 MG/M3.

Copper fume - OSHA (PEL): TWA-0.1 MG/M3.ACGIH (TLV): TWA-0.2 MG/M3.

Nickel - OSHA (PEL): TWA-1 MG/M3. ACGIH (TLY): TWA-1 MG/M3. Iron
Oxide fume (FE2Os) - OSHA (PEL): TWA-10 MG/M3. ACGIH (TLV): TWA-5 MG/M3.

Manganese - OSHA (PEL): Ceiling = 5 MG/M3.

CARCINOGENICITY:

Nickel is listed by NTP as an anticipated human carcinogen and by IARC as a

probable human carcinogen. Other ingredients not listed.

EFFECT OF OVERDOSE: .

Gingivitis, stomatitis, metallic taste, sneezing, congestion, nausea, chills, fever.

EMERGENCY AND FIRST AID PROCEDURES:

Skin: Flush thoroughly with water. Eyes: Flush with water, call Physician.

Ingestion - call Physician. Inhalation: Remove victim to fresh air, call

Physician.

Nickel and copper fume, dusts and mists are listed by OSHA as air contaminants.

PRIMARY ROUTE(S) OF ENTRY: Inhalation

SECTION VI - REACTIVITY DATA

STABILITY - Stable

INCOMPATABILITY (material to avoid): (Dust & Fume) acetylene, chlorine

HAZARDOUS DECOMPOSITION PRODUCTS: Copper Fume/dust. Nickel Fume/dust. Iron Oxide fume.

Manganese Fume/dust.

HAZARDOUS POLYMERIZATION - Will Not Occur

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Dust or Fume - wear respirator follow OSHA use instructions, shovel up, or vacuum and place in approved DOT container and seal. Wash contaminated clothing.

WASTE DISPOSAL METHOD:

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Follow federal, state and local regulations for disposal.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify Type) : dust or fume - NIOSH/MSHA approved

dust/fume respirator

VENTILATION - Local Exhause: dust/fume - if exposure levels exceeded.

EYE PROTECTION: (dust) goggles

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Avoid breathing dust or

fumes. Do not take

internally.

TRW-00830

Preclude from exposure to fume and dust those individuals with diseases of the skin, sinuses and lungs.

0908-2196

SECTION 1 - IDENTIFICATION .

CHEMICAL NAME & SYNONYMS		
Cupro Nickel 109	*	
CHEMICAL FAMILY	FORMULA	TRADE NAME
Copper	Mixture	Alloy 706
DESCRIPTION		CAS NO.
Metal	, ,	Not assigned/mixture

SECTION 11 - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIV	E EQUIPMENT	VENTILATION REQUIREMENTS				
Eyes Gloves	Dust - goggles Impervious	As required to keep airborne concentrations below TLV for copper and				
Other	NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	nickel.				

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL			OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	•	Dust Fume		TD _{LO} 120 ug/kg (human)	No data	Metal fume fever, respiratory irritation
Nickel		Dust	1 mg/m ³	LD _{LO} 5 mg/kg (guinea pig)	No data	Dermatitis, suspect carcinogen

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT		OSHA CLASSIFICATION	FLAMMABLE	LOWER	UPPER		
METHOD	Not Applicable	Non-comb	ustible solid	EXPLOSIVE	N/A	N/A	
EXTINGUISHING MEDIA							
Noi	n-combustible - C	hoose extinguishing	media suitable for su	rrounding n	aterials.		
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES Use NIOSH/MSHA approved self-contained							
bre	athing apparatus	where this material	is involved in a fire.				

SECTION V - HEALTH HAZARD DATA

THRESHOLD LI	None established for mixture (Copper fume 0.2 mg/m ³ , Nickel dust 1.0 mg/m ³ ACGIH 1985-86).
SYMPTOMS OF	OVER EXPOSURE Dust and fume - sneezing, congestion, metallic taste, nausea, chills, dermatitis
	st or fume: Wash with EMERGENCY FIRST-AID PROCEDURES p and water before eating or smoking. If an irritation develops, call a physician.
EYES	Dust or fume: Flush with water for 15 minutes. Call a physician.
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.
INHALATION	Dust or Fume: Remove victim to fresh air. Call a physician.

23.2 auch

Health	2
Flammability	1
Reactivity	0
Personal Protection	Α

BOWMAN DISTRIBUTION MATERIAL SAFETY DATA SHEET

Health	2
Flammability	1
Reactivity	0
Specific Hazard	
MCDA Dealer	

HMIS Rat	ings		SECTION I				NFPA Ratings
PRODUCT NAM CUTTIN	-	L CO	OLANY			WMAN PART	NO. (page 1 of 2)
SUPPLIER			EMERGENCY TELEPHONE NO.				
	n Distr	ibutio	n, Barnes Group Inc.			<u>6) 391-720</u>	0
ADDRESS 850 East 72nd Street, Cleveland, OH 44103						E 2/90	
HAZARDOUS M	IATERIAL	DESC	RIPTION, PROPER SHIPPING NAME, HAZARD	CLASS, HAZARD	ID NO. (49 C	CFR 172.101)	
Consu	mer Co	mmod	lity, ORM-D UN-1956				
			S (as applicable)			· <u>·</u> ··	
N.A.							
CHEMICAL FAN	AILY			FORMULA			
Mixture TM-842A							
			SECTION II - HAZARDOU	S INGREDII	ENTS		
CAS REGISTRY NUMBER	%W	%V	CHEMICAL NAME(S)	PPM OSHA PEL	PPM ACGIH TLV	STEL Other Limits	Listed as Carcinogen NTP, IARC or OSHA 1910(z) (specify)
71-55-6	73		*1,1,1 Trichloroethane	350	350	450	No
127-18-4	24		*Perchloroethylene	25	50	200	Yes (IARC)
124-38-9	3		Carbon Dioxide	5000	5000	30000	No

ALL CHEMICAL COMPOUNDS MARKED WITH AN ASTERISK () ARE TOXIC CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) OF 1986 AND 40 CFR PART 372.

SECTION III - PHYSICAL DATA

BOILING POINT 162-252 °F	∞	SPECIFIC GRAVITY (H ₂ O = 1)	1.5		
VAPOR PRESSURE 100 @ 70 °F °C mm Hg [X psi	PERCENT VOLATILE BY VOLUME (%)	100	PERCENT SOLID BY WEIGHT (%)	N.A.
VAPOR DENSITY (AIR = 1) Heavier than air	4.0	EVAPORATION RATE (BuAc = 1) Butyl Acetate	<5.0		
SOLUBILITY IN WATER	None	PH=	N.A.		
APPEARANCE AND ODOR Clear/solvent odor	·	,	*	MATERIAL IS: Liquid & Gas	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FEASH FOILT HOLE	menior asea	LEVINIMABLE FIMILIS		UEL
°F°C		<u> </u>	None	None
EXTINGUISHING MEDIA				
Use water fog, dry chemical or carbon dlox	ide.			
SPECIAL FIRE FIGHTING PROCEDURES				
Aerosol cans may rupture when heated.				
UNUSUAL FIRE AND EXPLOSION HAZARDS	3			
Heated cans may burst.				

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N.A. - Not Applicable N.E. - Not Established N.D. - Not Determined

SECTION V - HEALTH HAZARD DATA

May cause di:	zziness or	narcosì	is in high vapo	or cor	JDE TARGET ORGAN EFFECTS) centrations. Will cause defatting orage. The solvents listed have been	f skin. Effects are reversit reported to affect the cent	ole. Long term exposure ral nervous system.
CONDITIONS Exposure to h			s of vapor.				
SIGNS AND S Inhalation – d PRIMARY RO Ingestion	UTES OF E	breathi NTRY	ng. Skin-redr Inhalation	ness.	Ingestion-vomiting. Skin Contact X Other (specify)		
1					ge. Wash eyes and skin with water.		
MEDICAL CO Heart disease			VATED BY EX				
<u></u>	UNSTABI	Ε	CONDITIONS		CTION VI - REACTIVITY	DATA	
STABILITY	STABLE	x	High tempe	rature	s		
INCOMPATIB				rona d	exidizers. Not compatible with activ	/e metals.	
HAZARDOUS	DECOMP	OSITION	PRODUCTS:		ene. In fire will decompose to carb		
HAZARDOUS			CCUR	1	CONDITIONS TO AVOID	on dioxide and water.	
POLYMERIZA		WILL	NOT OCCUR	R X None			
<u> </u>		·	SECTI	ON	VII - SPILL OR LEAK PR	ROCEDURES	
STEPS TO BE Use absorber	TAKEN IN	CASE N	MATERIAL IS I	RELE/	ASED OR SPILLED sterial. Put into container. Dispose	as hazardous waste.	
Dispose as h			accordance	with E	PA RCRA.		
CEDELA /Sii	and and the	одота	BLE QUANTIT	∀ 7:=1	00.1		
N.E.			D. (40 CFR 261		us.,		
VOLATILE OF as packaged,	RGANIC CO	OMPOU	ND (VOC)	Χ -	Theoretical 10.8 lb/gal		
100%		BI)	[[7	Analytical lb/gal		
					- SPECIAL PROTECTION	N INFORMATION	
RESPIRATOR Self contains	RY PROTE(d breathin	CTION (: g appar	specify type) etus if TLV lin	nit is e	xceeded.		
							
VENTILATION	LOCAL EXHAUST (specify rate) VENTILATION LOCAL EXHAUST (specify rate) Yes. Provide sufficient ventilation to maintain exposure below TLV. None						
	None		(general) (spe	icity ra		OTHER None	
PROTECTIVE	d if sprayir	ig i			EYE PROTECTION (spec Wear eye protection	city type)	
OTHER PROT			in i				
Conco o recor	10 TO OE 3	PAIZEAL			ON IX - SPECIAL PRECA	AUTIONS	TDW 0000
Keep away fr	om heat, s	parks o	N HANDLING r open flame.	Store	at temperatures below 120°F.	 	TRW-00833
OTHER PREC	CAUTIONS						
			half can conti	nuou	sly, or more than one can consecuti	ively, use NIOSH approved	respirator.
ļ							

19466 (page 2 of 2)

N.A. - Not Applicable N.E. - Not Established N.D. - Not Determined BOWMAN DISTRIBUTION, BARNES GROUP INC. 850 East 72nd Street, Cleveland, Ohio 44103 Franciancy Telephone No. (216) 391-7200 1/22/90

THE WIFE OF CO.

MATERIAL SAFETY DATA SHEET

DATE PREPARED 9/13/85 **

EMERGENCY HAZARD RATING
FIRE

4 - EXTREME
F 3 - HIGH
P 2 - MODERATE
A 1 - SLIGHT
O - INSIGNIFICANT

SPECIFIC HAZARD

CP CHEMICALS, Inc.

Required under 29 CFR 1910, 1200

JUANILATE	Arbor Street, Sewaren,	NJ 07077 • 20	1-636-4300 • CHEMTREC 800-424-9300 * KEEP	AWAY FROM ACIDS.
SECTION I - PRODUCTI	ON INFORMATION: SI	NGLE SUBST	ANCE MIXTURE D ** Rvsd.	9/86
Chemical Name & CAS No.	SODIUM CYANIDE			
Trade Name & Synonyms	CAS # [143-33 Cyanide of Soc	•	o sold as "Brik & Granular")	18 TH
Chemical Family	Soluble Cyanid		Chemical NaCN Formula	W.
SECTION II - HAZARDO	OUS INGREDIENTS AN	ID/OR CHARA	ACTERISTICS	
	SODIUM CYANIDE	98/99%		
				·
SECTION III - PHYSICA	L DATA			
Melting Point (°F)		1040%	Specific Gravity (H2O=1)	1.6
Boiling Point (°F)		2725°	Percent Volatile by Volume (%)	NA
Bulk Lensity (LBS/Per Cu/Ft.)	50.8	pH 0.1 N aq.sol.	11.0
Solubility in Water Slig	ht			
Appearance and Odor Wh	ite crystalline	powder o	or lumps; (toxic)almond odor.	
SECTION IV - REACTIVI	TY DATA			
Stability Unstable X Stable	ditions to Avoid Exposu	re to air	, heat, steam.	
Incompatability (Materials to	Avoid) Nitrates,	Nitrites	s, peroxides, oxidizers, etc.	
Hazardous Decomposition Pr (eacts with a	oducis Emospheric CO ₂ ,	other ac	cids, to release poisonous HCN	gas.
dazardous May Occur Polymenzation	X Conditions to Avoid	HCN gas	may polymerize explosively.	
Will Not Occu			·	
SECTION V - FIRE AND	EXPLOSION HAZARD (DATA		
Flash Point (Method Used)	NA		Flammable Limits NA LeL NA	UeL NA
Extinguishing Media A1	kaline dry chem	aical. Do	not use CO ₂ , water.	
Special Fire Fighting Procedu	res Toxic to ma	rine life	. Avoid flushing water solut	ion to
sewer or stre	am. Do not mix	with aci	ds or acidic water, CO ₂ , stea	m.
U 31 Fire and Explosion F	handa		·	
	אטני בטוווטט		self, but thermal decompositi flammable hydrogen cyanide ga	

DOT EMERGENCY RESPONSE GUIDE NO. ____55

SECTION VI - HEALTH HAZARD DATA
Exposure Limits TLV: 5 mg/M (ACGIH) (skin) Twa: 5 mg/M (ACGIH) (skin)ceiling: NDA
Effects of Overexposure Forsoutting may result from indescrout, apportant curough injured
Acute: skin or inhalation of hydrogen cyanide liberated by action of carbon dioxide
cor other acids. Strong solutions are corrosive to skin, eyes. Damage to central nervous system. Chronic exposure over long periods may cause fatigue,
Emergency First Aid Procedures Always have fresh cyanide first aid kit at hand. /weakness. Call physician immediately.
Wash with copious amounts of water for at least 15 mins. See physician.
Wash with copious amounts of water, remove contaminated clothing. See doctor.
Innalation Remove to fresh air, lay down. Start treatment immediately with amyl nitrite inhalant. Call physician. Remove contaminated clothing, keep patient Ingestion Same instructions for inhalation. warm. See warning label on container for more complete first aid directions. OTHER HEALTH INFORMATION:
LISTED: DCarcinogen DTeratogen DMutagen XDOther suspected Carcinogen
SECTION VII - SPECIAL PROTECTION INFORMATION — PRODUCTION AND/OR MAINTENANCE OPERATIONS
Respiratory Protection (Specify Type) Respirator approved for cyanides
Ventilation Local Exhaust Keep HCN below 10 ppm Special None
Mechanical (General) Recommended Other Fresh Cyanide first Aid Kit. Eli-Lilly Item #M76- NDC# 0002-238-501
Protective Gloves Heoprene Eye Protection Goggles, face mask
Other Protective Equipment Rubber boots, apron
SECTION VIII - SPILL OR LEAK PROCEDURES
Stern to be Taken in Case Material is Released or Spilled Wearing respirator, cover spilled solid with
e. Sweep up: store tightly closed for disposal. Decontaminate area with
hypochlorite solution to oxidize residual cyanide. Wasie Disposal Melliod React cautiously with sodium bypochlorite solution at pH 8.5-10
to oxidize cyanide safely. Ensure complete reaction before sewering resulting
salt (NaCl) solution.
SECTION IX - SPECIAL PRECAUTIONS
Precautions to be taken in Handling and Storing Avoid contact. Keep container tightly closed. Store
away from acids, oxidizers. Keep solutions alkaline. Do not store in aluminum or plack iron plate receptacles. Keep away from foods & beverages.
Other Precautions High concentration of HCN produces paralysis, unconsciousness,
convulsions, and respiratory arrest. Exposure to 150 ppm for 1 to 1 hr. may
endager life. Death may result from a few minutes exposure to 300 ppm. Average fatal dose: 50-60 mg. Headache, vertigo, nausea & vomiting may occur
SECTION X-TRANSPORTATION DATA: with lesser concentrations.
Proper Shipping Name RQ Hazard Class ID # (49CFR 172-101)
Sodium Cyanide, solid 10/4.54 Poison B UN1689
TRW-00835
Special Information High toxicity after inhalation. Fairly high concentrations (when
i led app. 200 ppm, orally 200-300 mg NaCN) cause immediate loss of conscious-
NA = NOT APPLICABLE NDA = NO DATA AVAILABLE (= LESS THAN) = MORE THAN
The information herein is believed to be reliable. However, no warranty, express or implied, is made as to its accuracy or completeness, and none is made as to the fitness of this material for any purpose. The manufacturer shall not be liable for damages to person, or property resulting from its use. Nothing herein
shall be construed as a recommendation for use in violation of any patent.